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This document presents vignettes illustrating improvements in learning resulting from educational innovations developed through research sponsored by the Cooperative Research Act of 1954, the National Defense Education Act of 1958, the Vocational Education Act of 1963, the Higher Education Act of 1965, and the Elementary and Secondary Education Act of 1965. Innovations described include a tape recorder technique for developing socially acceptable language in children, Individually -rescribed Instruction (IPI), a soap opera format for televised adult education programs, a new method for teaching history, physics classes designed to attract liberal arts students, a "New English" which uses inductive teaching to develop critical readers, microteaching, an early childhood education reading program, simulation and other techniques for teaching social studies, Computer Assisted Instruction (CAI), a reading-language program for teaching English to Spanish-speaking children, a technique for learning mathematics by doing it, a program which teaches mothers how to work with their children, tests for matching a student's traits with those of a college, experimental vocational education programs for high school dropouts, simulation training for school principals, "Gateway English" for urban disadvantaged children, foreign language tests to facilitate language teacher placement, a computerized manikin used to train anesthesiologists, and a special method for teaching music to children. (SG)

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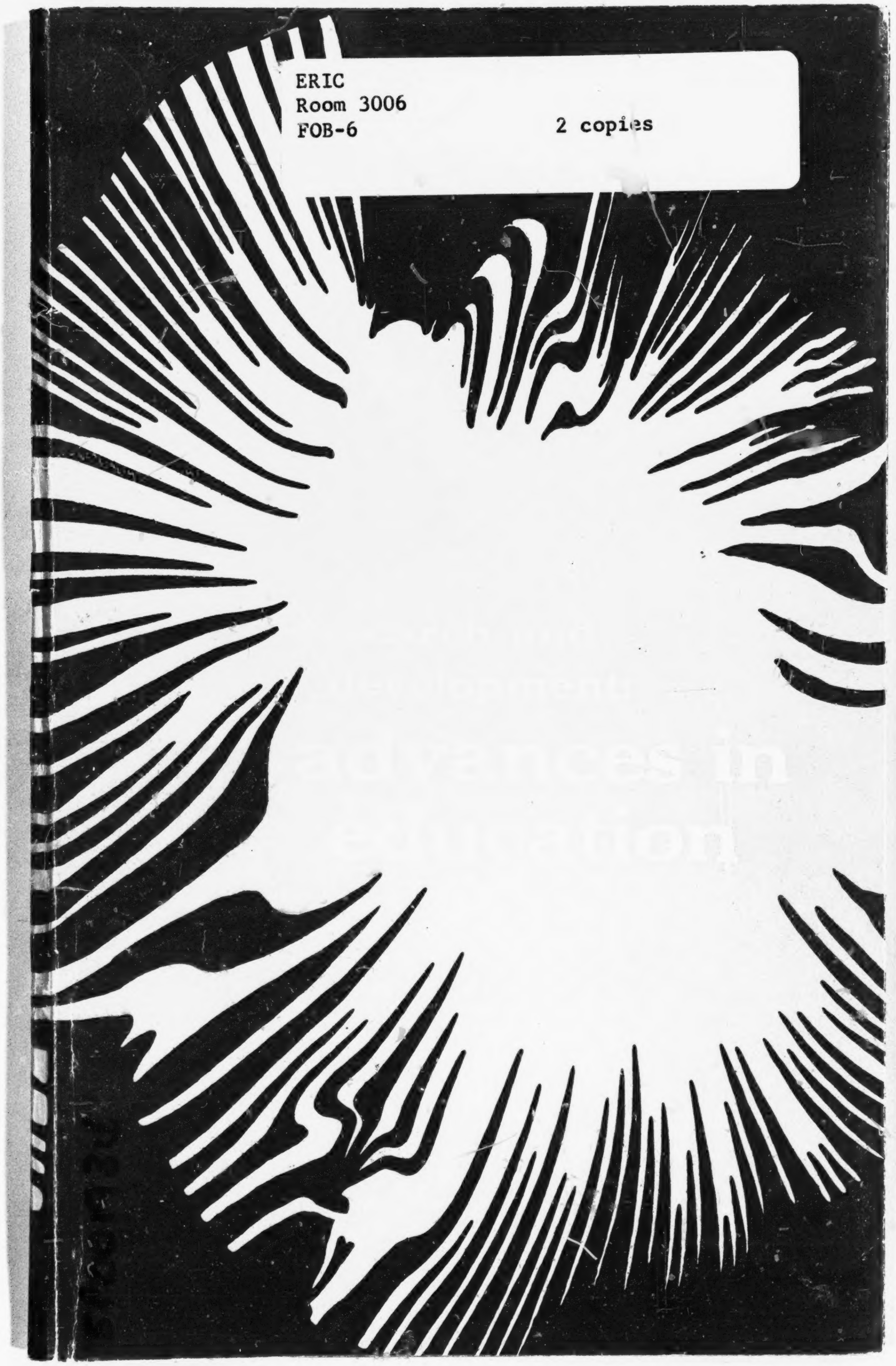

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U.S. Department of Health, Education, and Welfare/Wilbur J. Cohen, *Secretary*
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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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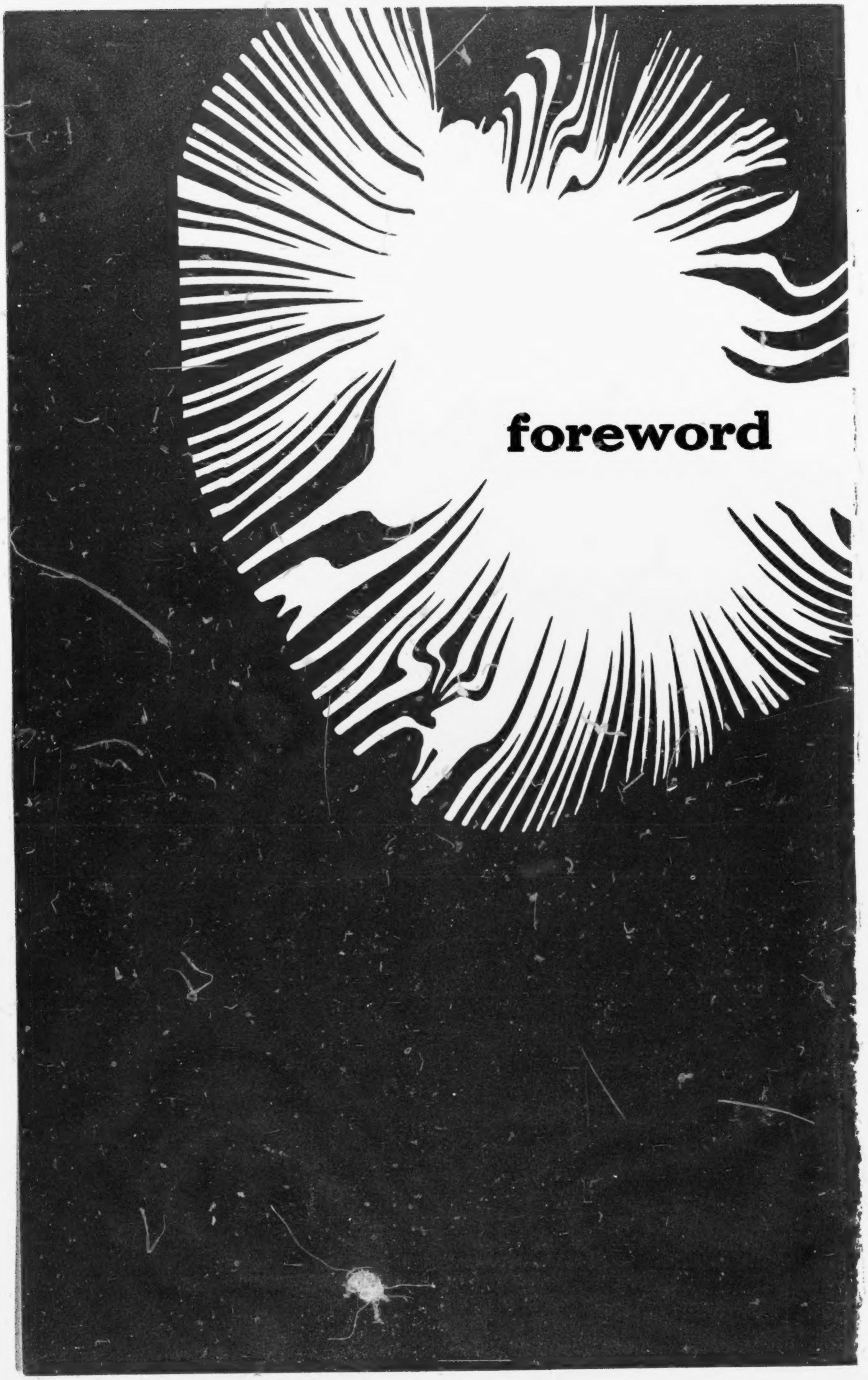

foreword

In education, as in all fields, progress depends on research. Passage of the landmark Cooperative Research Act in 1954 reflected the awareness of the Congress and the public that improving education is a nationwide need and that it is the Federal Government's responsibility to encourage research to meet that need. Since 1954, a number of other laws have been enacted—the National Defense Education Act of 1958; the Vocational Education Act of 1963; the Higher Education Act of 1965; and the Elementary and Secondary Education Act of 1965—all of which contain provisions for the administration of an expanded research program by the U.S. Office of Education.

The net effect of the legislation has been to allow for broad-scale systematic research, development, demonstration, and dissemination for the improvement of education at all levels of learning. New techniques have been devised for individualizing the learning process. Successful approaches for motivating disadvantaged youngsters have been devised. New and improved methods have been developed for training teachers.

Curriculums that more fully challenge the student have been developed in the social sciences, English, and other subjects. Increasingly, modern educational technology has demonstrated its effectiveness in the classroom. These are but a few of the changes being wrought through systematic educational research and development activities.

The vignettes that follow endeavor to show how some of these forward-looking and promising educational innovations are making a significant contribution to the improvement of learning. Many more examples, of course, could be cited. But the projects and programs contained herein, all of which are supported by the Office of Education's Bureau of Research, make it clear that progress in education is indeed inextricably linked to research.

NORMAN J. BOYAN, Acting Associate Commissioner, Bureau of Research

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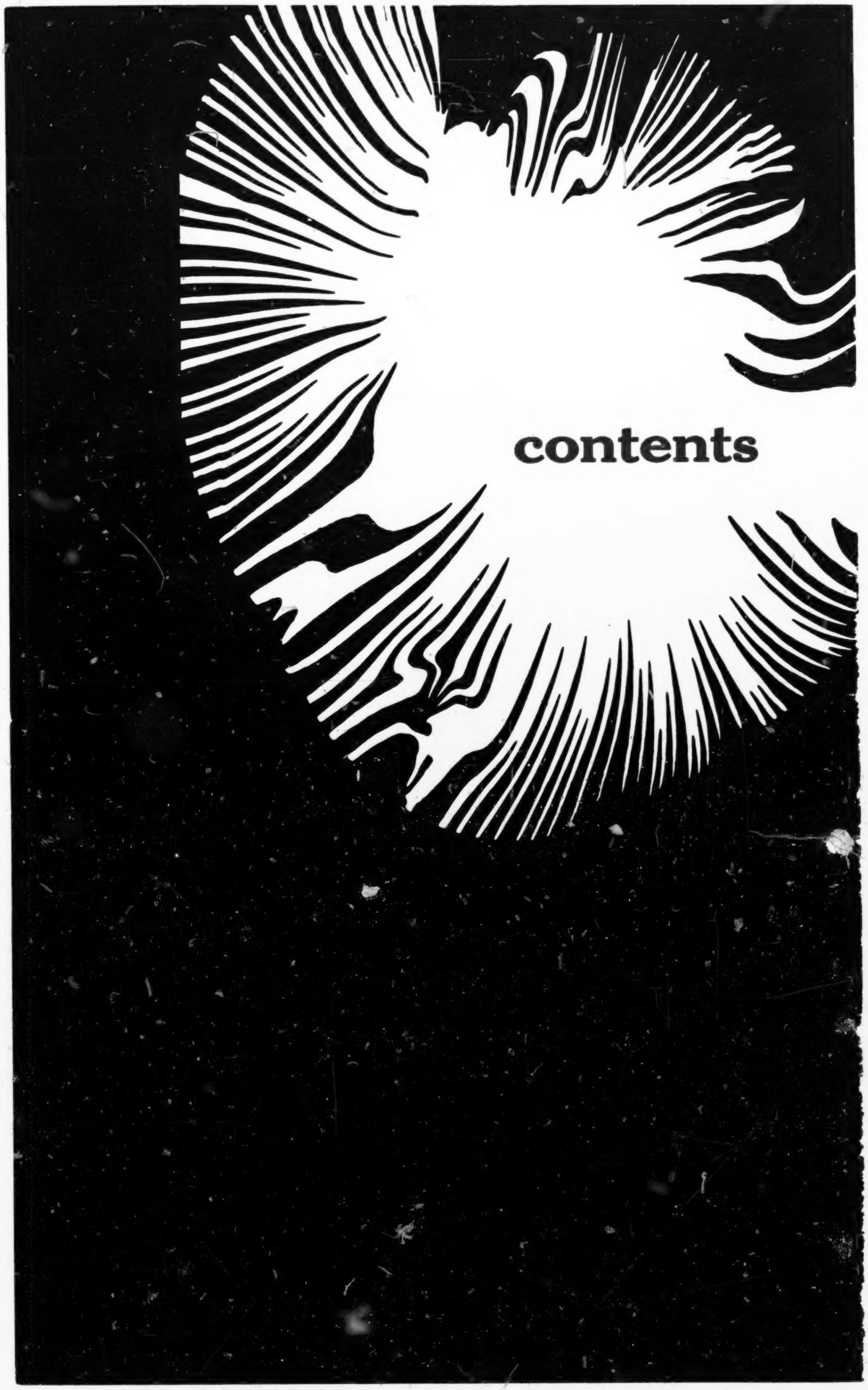
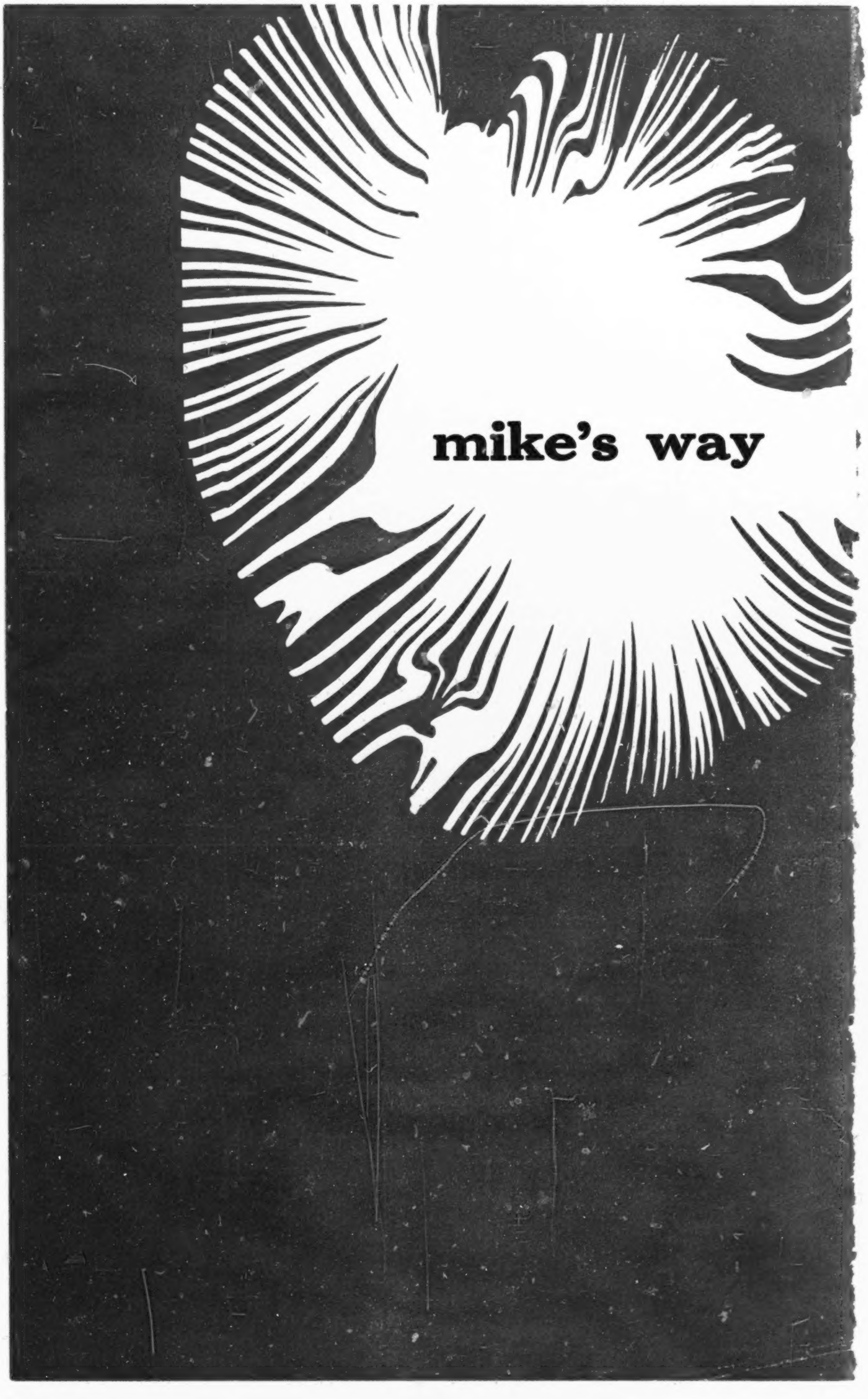


contents

1 MIKE'S WAY
5 INDIVIDUALIZING EDUCATION
9 THE SOAP OPERA TECHNIQUE
13 HISTORY TAKES A NEW TURN
17 GOOD ENOUGH FOR GALILEO
23 NEW ENGLISH . . . THE QUIET REVOLUTION
31 TEACHING TEACHERS
37 STARTING EARLY
41 SIMULATION IN SOCIAL STUDIES
45 CAI COMES TO THE CAMPUS
49 LABORATORY FOR PROGRESS
55 DISCOVERING MATHEMATICS
59 MOM LEARNS TO TEACH
65 CHOOSING THE RIGHT COLLEGE
69 TO GET A JOB
77 LONG DISTANCE LEARNING
83 PRINCIPAL PROGRESS
87 GATEWAY ENGLISH—GATEWAY TO LEARNING
91 OPENING UP THE WORLD
97 PROVIDING BETTER LANGUAGE TEACHERS—SI!
101 THE MANIKIN AS THE TEACHER
105 THE SOUND OF MUSIC



mike's way

First graders in three Detroit, Michigan, schools have fallen in love with Mr. Mike, the new diction teacher who visits them weekly to help with dialect problems. Teachers say that even when he's gone, he leaves a lasting impression: if one child makes a verbal slip, another is likely to cry out, "Mr. Mike wouldn't like that!"

/1

Although it's nothing new for children to grow attached to good teachers, Mr. Mike's spell is somewhat exceptional—the children have never been closer to him than a tape recorder. But they have the same empathy with the tape recorder voice that their parents had with radio's "Lone Ranger."

"The children really enjoy it," says Mrs. Sofia Hornovich, a first-grade teacher at Tendler Elementary School on lower East Side Detroit, who has used the tapes nearly 2 years. "They really think they're talking to Mr. Mike. It brings them out of their shyness and their speech clearly improves."

The technique of using Mr. Mike was devised by Mrs. Ruth Golden, a teacher in the Detroit schools for many years. Aware of the need to help ghetto children acquire socially acceptable language, Mrs. Golden made up 36 taped lessons which give youngsters practice in speech games, songs, and poems.

Funds to develop the tapes were furnished by the U.S. Office of Education under the National Defense Education Act of 1958, which provided for research and development of ways to use new educational media. Early tests done on a small scale in Detroit schools have shown that certain features of the Negro dialect decreased up to 66 percent in children who had used the tapes.

The lessons start out like this: "Hello, boys and girls. My name is Mr. Mike. The game is to speak just as I do. Listen and say after me as you point. This is my head . . . This is my chin . . . " (Children repeat)

2/

"Oh, did I hear someone saying 'Dis'? We're saying 'This is! Be sure to say is.' "

Phrases are designed to give the group of children repetition with the words and phrases Negro tots most often misuse. There are also lessons on "The Magic Words"—please, thanks, excuse me—and sections which encourage self-pride and love of country. Another voice on the tapes, "Mrs. Mike," joins in the conversation and leads songs and games.

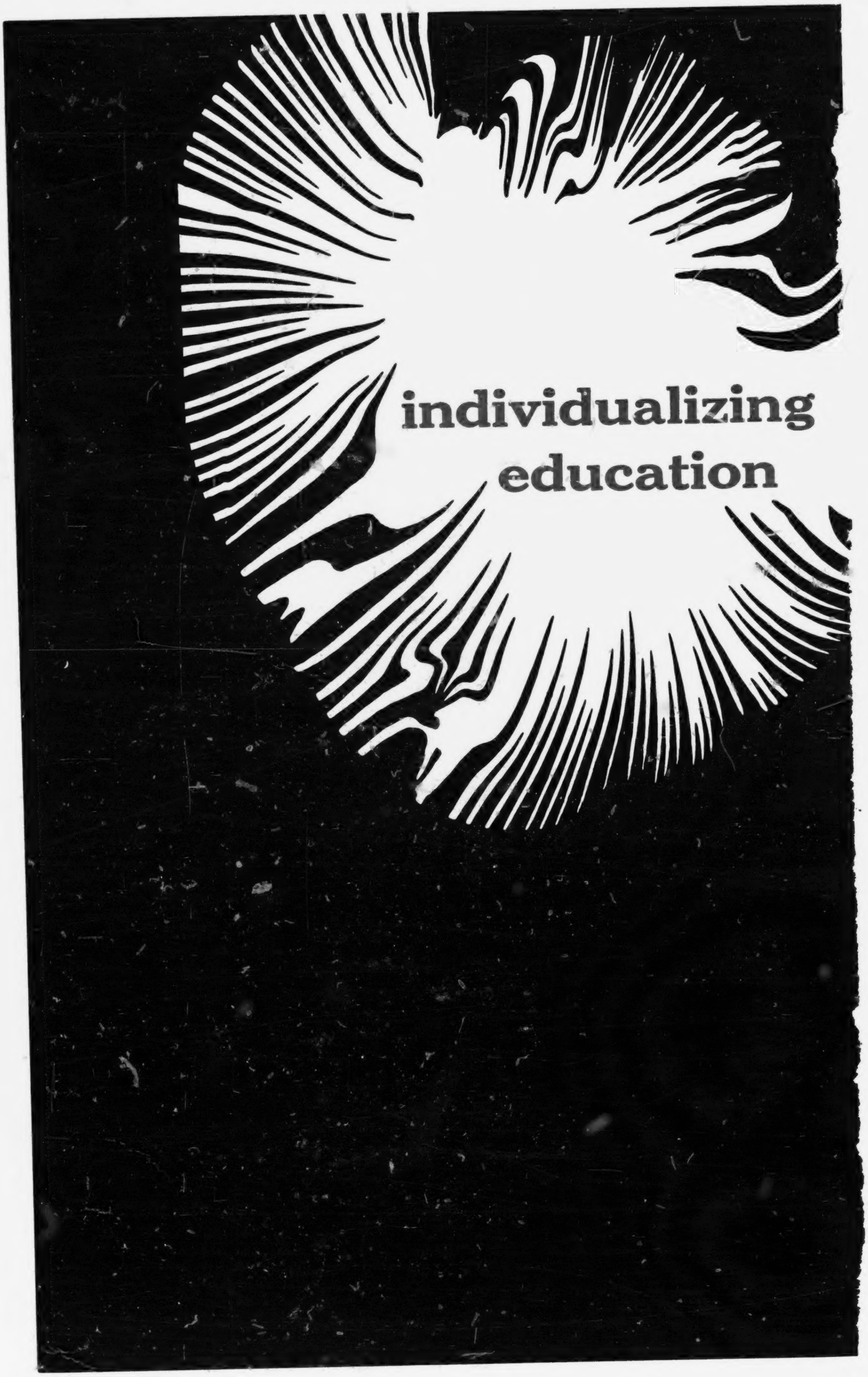
Mrs. Golden's methods do not degrade the kind of speech the children use at home. "On the contrary," she says, "we teach them that there are many ways to speak, but we talk Mike's way to be understood by most people. The earlier a child gets practice in the sounds and usages of school and the business world, the better are his chances of growing up to full participation in citizenship."

Parent reactions have been encouraging. "At first, when parents heard about the language project, they were afraid we were criticizing their children's speech and, by indirection, their own," says Mrs. Hornovich. "But then the children began going home talking about Mr. Mike with great enthusiasm without mentioning that he was on the tape recorder. When parents learned what it was all about, they grew interested and excited themselves."

As added enrichment, each year the classes send Mr. and Mrs. Mike Christmas cards, and one class has made puppets of the tape recorder teachers.

The tapes have been used experimentally in Lillibridge, Tendler, and Scripps Annex elementary schools in inner city Detroit since 1966. Since then, Mrs. Golden estimates that at least 20 other schools all over the country have begun using the language materials.

The tapes can be used with large groups of youngsters or by one child at a time in a listening corner of the room. "A listening laboratory with one or more sets of earphones is all that is required to establish a language laboratory in the classroom," says Mrs. Golden.



individualizing education

"It made me so mad I didn't know whether to laugh or cry. Joanie was having trouble with her second-grade arithmetic so I went to see her teacher. Do you know what she told me? I mean she really said this. She said Joanie was having trouble with arithmetic and I'd better teach her at home because she was too busy to teach her. And when I said, 'But I'm not a teacher and I get mad and both of us end up in tears,' she said, 'That's too bad. Joanie is such a sweet child, but I have to teach the whole class.'

"That was before they put IPI in the school. This year it's completely different. With IPI, Joanie gets individualized instruction."

IPI, Individually Prescribed Instruction, is indeed different. Developed by the University of Pittsburgh's Learning Research and Development Center with research funds provided by the U.S. Office of Education, it is a technique that tailors instruction to the pupil. First successfully tested and refined by the Center at the Oakleaf elementary school, just outside Pittsburgh, Pa., IPI is now being made available to thousands of pupils at schools in many parts of the Nation by Research for Better Schools, Inc. (RBS), a Philadelphia-based regional educational laboratory supported by the U.S. Office of Education.

In IPI each step in learning mathematics and reading has been spelled out. Materials have been developed or adapted for children to use in mastering these steps. Tests have been devised to give the teacher an immediate understanding of just where the child is having trouble or where he can move ahead more rapidly. And new ways for teachers to work with children and with one another also have been devised.

Looking at an IPI classroom one sees children working alone or in small groups, quietly, intently. That person bending over a small perplexed head in the corner is the 6/ teacher. She no longer teaches to a whole class. Everyone is working on his own lesson. Some children are counting from one to ten, but that little boy over there is learning about solid geometric figures and that girl over there is learning to tell time. The teacher has looked at their test scores and has prescribed the lesson for each child.

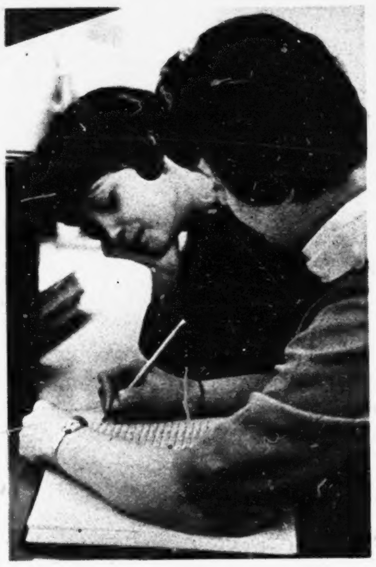
Once a prescription is written, the child is responsible for obtaining the materials he needs to work with. One sees children getting up with their folders, leaving the room without asking permission and coming back again to sit down to work. There is more to IPI than the mastery of skills in math and reading. The child learns to be responsible for his own learning. If he needs help he will get it. If he needs encouragement, he will get it. He learns that there are teachers and aides to help him in his quest for knowledge, but finally it is his quest.

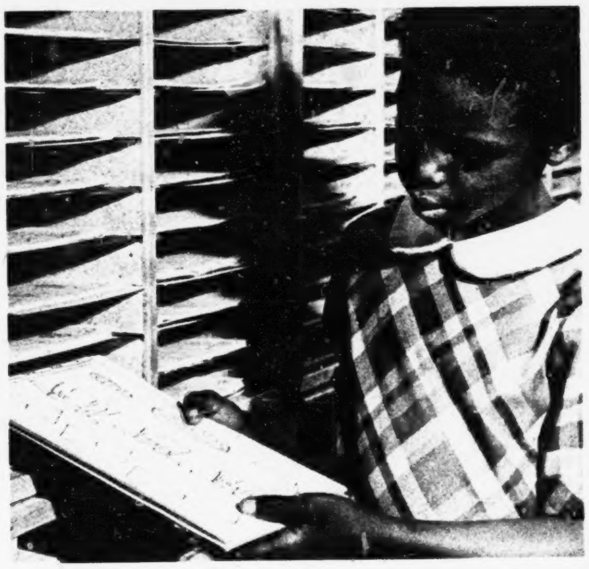
This is a real and responsible kind of student power. It has begun at the very earliest grades, and so far it works. RBS studies show that there are fewer absences among children in the IPI classes than among those in regular classes. Children like school better. They know what they are supposed to do, and they know how to do it because they have been taught the method of IPI as well as the content.

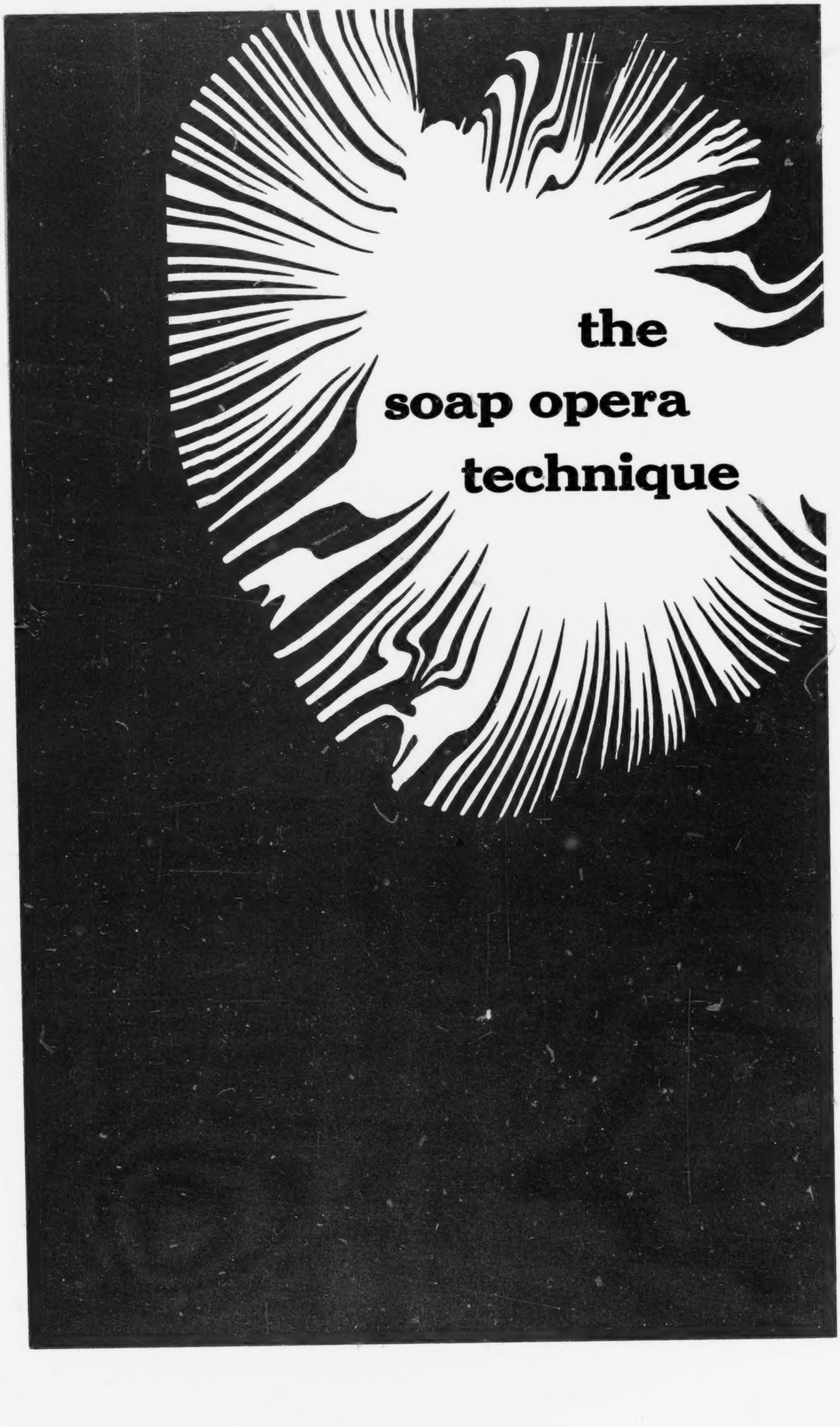
IPI is different for the teacher in many ways. In the classroom she has the time and the precisely tested knowledge of each child's achievement necessary to teach each child. And if somehow she can't get through to a child? Each of us is different and sometimes we have trouble communicating. In IPI the teacher is not alone in her classroom, locked away from other teachers and professionals. There is usually a floating teacher in the room with whom the teacher can consult or who can try her individual approach to an individual child.

Outside of the class teachers plan for the children and write prescriptions together with the principal. There is real team work here. And the special skills of each teacher are brought to bear on the special problems of each child.

"It would be very difficult for me to go back to a conventional school," says Mr. Donald Deep, principal of Oakleaf. "I'm sold on IPI. I feel our kids really have the opportunity to develop and express themselves more freely, and also to make decisions on their learning. Of course, we try to teach them to make good decisions."







the
soap opera
technique

When diphtheria strikes little Ramon, his granny gives him her pet remedy—herb tea, guaranteed to fend off the "Evil Eye."

After two months of looking for a job, Floyd begins to feel that the best thing he can do for his family is to disappear.

Meanwhile, Sam finds out that the broken-down TV he just bought for $2.50 a week is going to cost his poverty-stricken sister a whopping total of $200.

Does this sound just like a soap opera? Well, that's just what it is. Ramon, Sam, and Floyd are characters in a TV serial where they act out the trials and tribulations afflicting the day-to-day lives of America's slum dwellers. The lifelike little dramas were shown to mid-day viewers over Denver's ETV station in 1967, giving an unusual twist to adult education.

The soap operas are about the Valdezes and the Donahues, typical Spanish-American and Negro families who would be at home in Denver's inner city. The stars are Mrs. Valdez, an Aid-to-Dependent Children mother; her heavy-drinking brother Sam; Floyd Donahue, his wife, and their children. Bit parts go to the school principal, a doctor, and others who might brush against the lives of these families. In the background is Mrs. Donahue's niece Marilyn, who trips happily past her elders' problems and gets married at the end of the serial.

The sets for the eight-part series look as much like Denver's public housing areas as possible. The roles are based on the lives of typical residents, although slightly idealized so that the viewers can identify easily. While the episodes offer plenty of warmth, laughter, and sadness, a little lesson is woven into each scene.

The TV series is the brainchild of Dr. Harold Mendelsohn of the University of Denver's Communication Arts Center, who feels that most adult education programs are too formal to interest the poor. "They have generally bypassed the large numbers of disadvantaged
10/ who, presumably, might benefit from exposure to them most," he explains. Instead of teaching the three R's or some other formal subject, Dr. Mendelsohn's films offer another kind of education—schooling to help the poor cope better with everyday life.

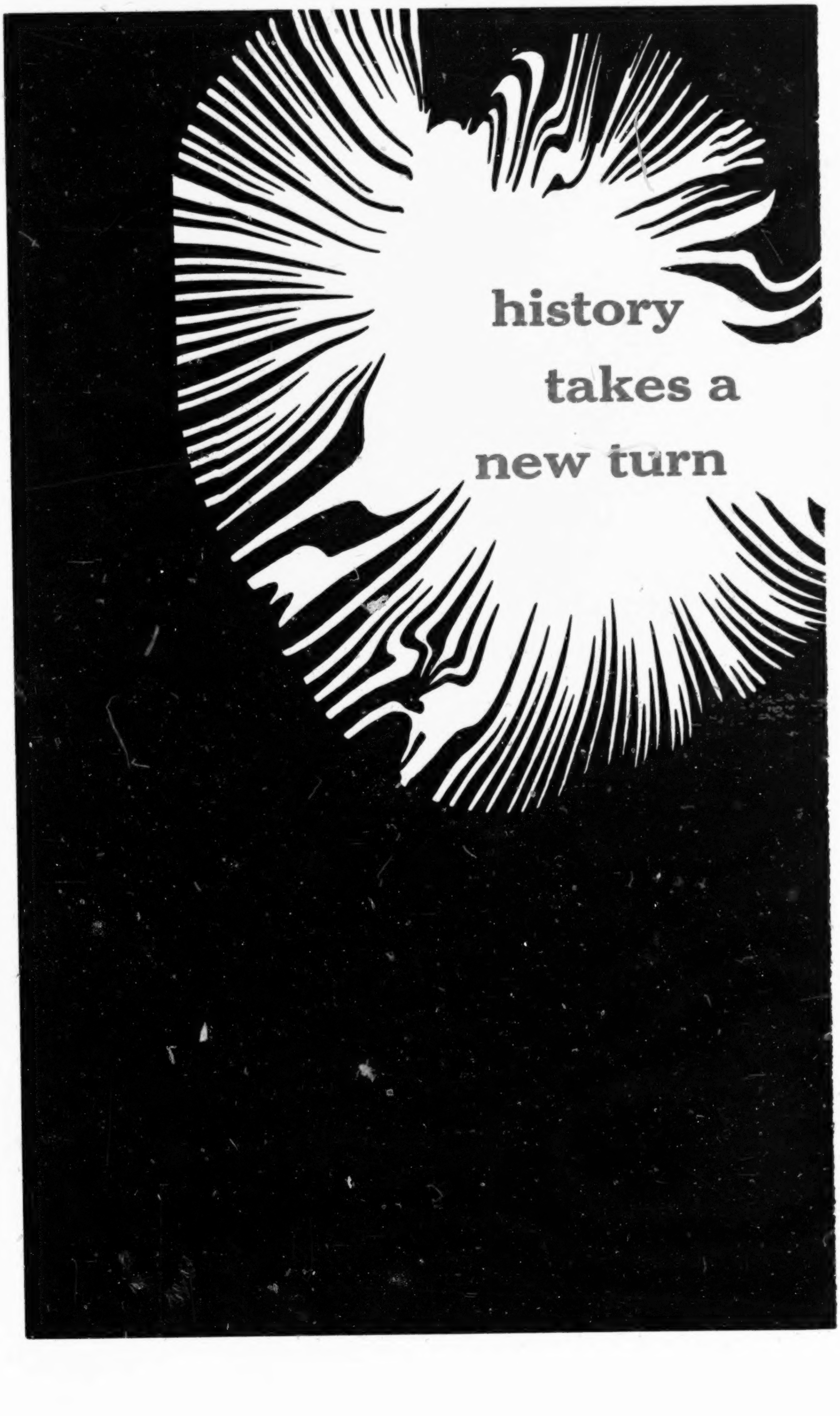
But first he had to find a format that would appeal to large numbers of poor people. He asked about 600 residents of one of Denver's public housing projects what they liked best on television. The majority—most of the households were headed by women—preferred soap operas. So that format was chosen, a professional writer was hired, and eight 30-minute soap operas were produced and aired over KMRA-TV, Denver's ETV channel. Funds for the project were provided through a U.S. Office of Education grant.

The film topics were also chosen indirectly by the public housing residents, who told Dr. Mendelsohn via questionnaires that their biggest worries were finding jobs, coping with family problems, caring for children, and money and health problems. In each show, actors drop tips on such subjects as good health and hygiene, adequate diet, living within one's means, wise shopping, and getting a job and keeping it.

Commercials also mimic the familiar TV format but push such things as the State Employment Service, prenatal care clinics, the Legal Aid Society, and other public services. In one "ad" the mayor invites viewers to be sure to let him know if the city government's services aren't measuring up.

Eventually, everything works out in the serial —Floyd learns that the Opportunity School is the key to a job and it doesn't cost anything to go there; Ramon goes to the hospital and gets well. As for Sam, at least he'll be wiser the next time he buys something on credit. Although the viewers didn't all find such happy endings for their problems as a result of watching the shows, researchers did find the soap-opera approach promising. Sixty-two of the viewers queried said the shows had, in fact, helped them with everyday problems.

The Denver University film makers were also pleased with their rating. Although the education serial used special motivational techniques to interest viewers, its producers feel that the advantage was offset by the fact that their show was on the air such a short time and was presented over a channel the target audience rarely watched. Based on the number of public housing residents from the sample who watched the educational serial, its rating would have been a "7" according to the standard scale used by a major TV rating company. The average rating for other shows screened in Denver at the same time was "6," while only one commercial soap opera shown at that time regularly receives a rating higher than "7."



history takes a new turn

"Did a group of Scandinavians reach this country—and perish under Indian tomahawks—130 years before Columbus came? Once denounced as a fraud, the message they left for posterity is now called 'the most important archaeological object yet found in North America.'"

So George Glass dramatically introduces his 10th-grade history class to the riddle of the Kensington Stone, a worn gray slab covered with Norse lettering which, according to some historians, was deposited in Minnesota by lost Scandinavian seafarers who were trying to reach Greenland about 1362. A carefully argued historical paper seems to prove the case for the stone's authenticity.

Just as the class is convinced the stone is for real, Glass pulls out his trump card—another scholarly paper, apparently just as well documented, that denounces both the stone and its main defender as impostors. The point of the exercise, says Glass, is to teach the Ladue, Missouri, students that facts are far more furtive than one might think, especially if one is in the habit of accepting without question whatever comes up in a history class.

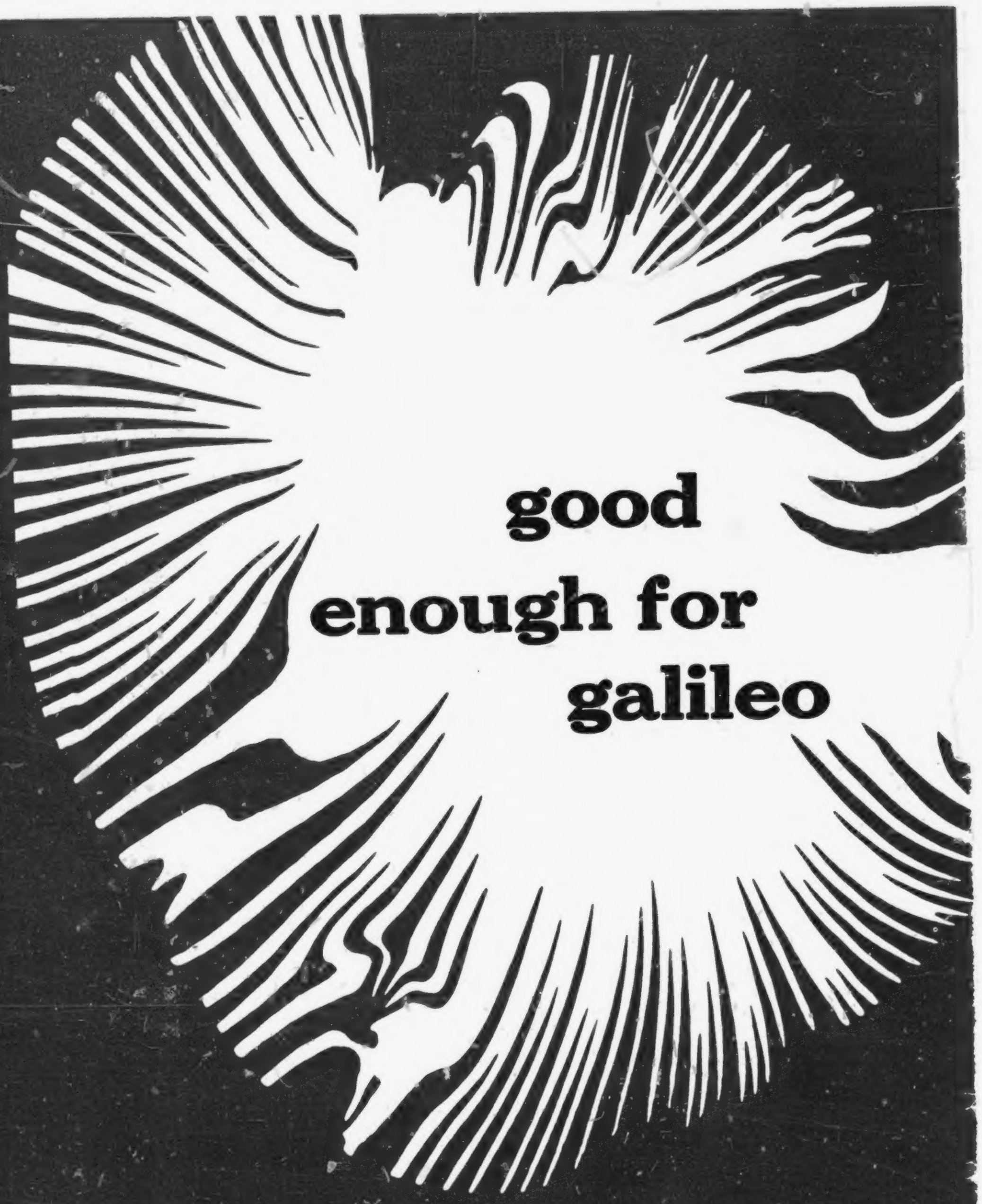
Glass is one of several teachers in the St. Louis area who are using a new method of history teaching recently developed at Carnegie-Mellon University under the U.S. Office of Education's Cooperative Research Program. Instead of presenting history as an interminable list of names, dates, and places, the new method attempts to show how the historian works. How do you unearth a fact? Once you've proved it, how do you give it meaning in the light of other information you have? How do you control your own prejudiced outlook, which may make some facts seem to stand out more than others? Students learn how to find answers to critical questions themselves—they develop the skills the historian himself uses in his search for truth.

Glass' students, for the most part, are scholastically able; that is, they're in the upper fourth of their class. Most are college-bound. He has found that they catch on to the "new history" quickly. They start out reading original sources—one early assignment has them comparing articles on the Hungarian uprising as reported in an American news magazine and in a Moscow newspaper. Then, through carefully planned questions, Glass helps them test the validity of the information. When the class writes papers, they must attack a historical problem and support their hypotheses with factual evidence. "They can't just copy the whole thing out of the encyclopedia," he said.

But the new curriculum plan has an objective above and beyond the development of historical-minded high schoolers. According to Dr. Edwin Fenton, director of the Carnegie project, "We hope to help every child develop into an independent thinker and a good citizen. We want to give them the means to make national decisions and encourage a cooperative attitude toward society. We want them to understand clearly the values of a democratic society We want them to be able to separate fact from fiction. And we want to give them knowledge—the knowledge to vote wisely and to make a visit to a play or museum meaningful."

Dr. Fenton, a well-known historian, believes that while students will tend to forget dates, names, and places that they briefly contact, they will remember the method of inquiry he teaches. "It will give them the lasting ability to read editorials, books, and articles intelligently," he says. Tests given last year also revealed that students have mastered the routine facts presented in social studies as well as those in traditional courses and in some cases, better. The Carnegie materials are available for grades 9 to 12 on world history, American history, social science methods, and comparative political and economic systems.

The "new history" also helps prepare students for the kind of mature, independent work they will have to do in college. In the words of one Pittsburgh teacher who has used the materials several years: "The students know a systematic way to investigate a problem. Under direction, they do their own research. We don't just turn them loose in the library but they do learn to find material on their own." She feels that one of the most valuable assets of the method is the fact that it teaches students to read and think for themselves. "They can write skillful critical analyses . . . that are better than those you usually find in freshman and sophomore courses in college," she says.



good enough for galileo

For centuries artists have depicted Galileo Galilei dropping objects of varying size and weight from the famed leaning tower of his native Pisa.

/17

But had the philosopher-scientist actually attempted the experiment, a Phoenix physics teacher claims, it is doubtful that he could have measured the speed of descent accurately enough to derive his now-famous principles governing free-falling bodies. For there were no watches in the 17th century. Indeed, Thomas Thorpe of West High School in Phoenix tells his students, there were no accurate timing devices at all.

Instead, Galileo probably devised a simple method of rolling balls down a slightly inclined plane, according to Dr. Thorpe. The scientist was then able to time the slowed-down descent accurately enough by means of a simple water clock.

If the method was good enough for Galileo, it's good enough for Dr. Thorpe's students, part of some 8,000 teenagers in 115 high schools in the United States who this year are trying out a new approach to physics. The new program was developed with U.S. Office of Education support at Harvard University by Professors Gerald Holton of the physics department, and Fletcher G. Watson and F. James Rutherford, both of the Harvard Graduate School of Education. Its special purpose is to give liberal arts-oriented high schoolers a good background in one of the most rigorous of the hard sciences.

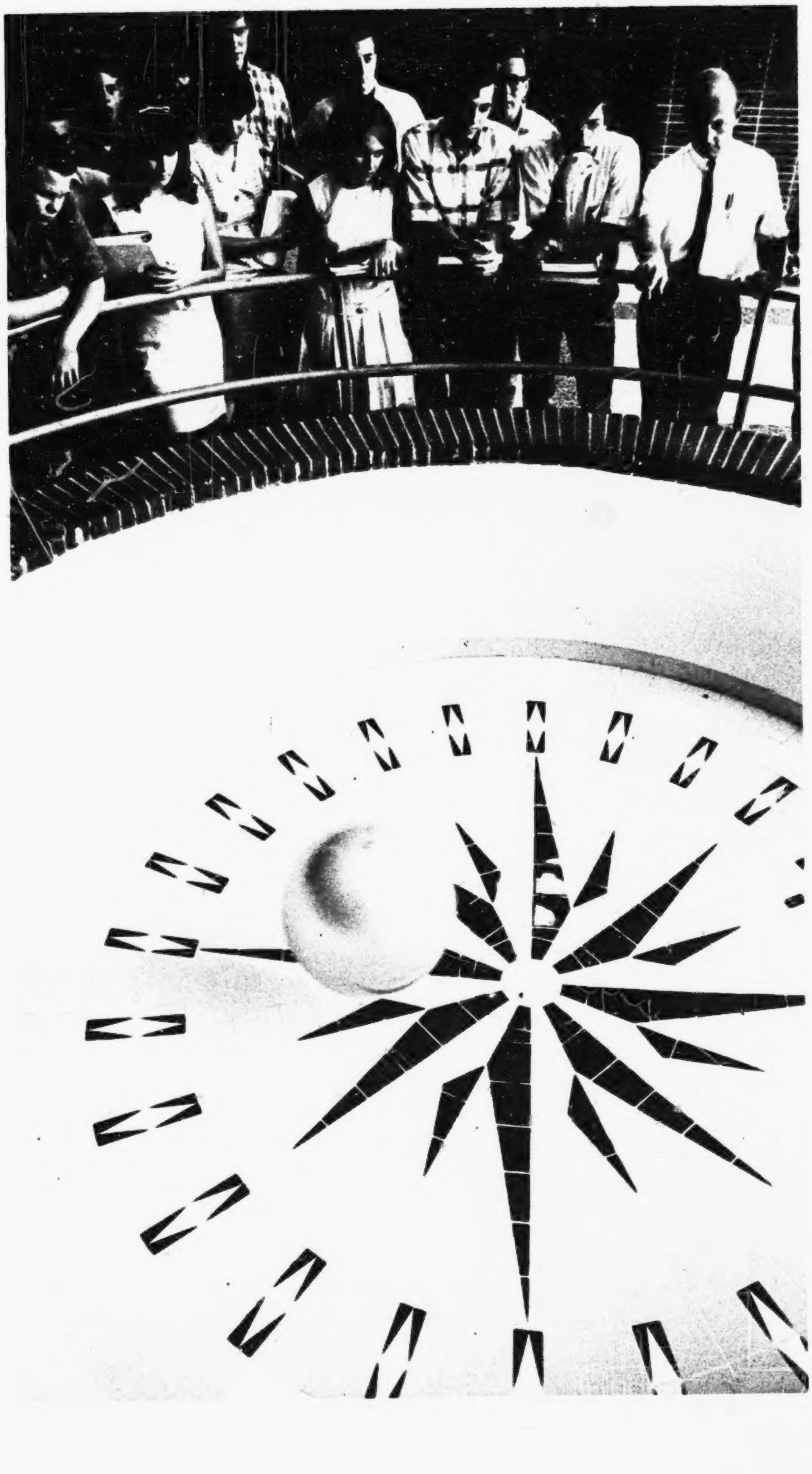
Why have a special course for students who normally would never venture into a physics classroom?

For one reason, according to the project di-

rectors, enrollment in U.S. high school physics classes has been declining, a fact that many educators observed with considerable concern. Harvard Project Physics has proved to be of tremendous interest to liberal arts students. In the past such students have been put off by
18/ the mathematical requirements of the usual physics course and by the rigorous, mathematically oriented study of the difficult worlds of optics, electronics, and thermo-dynamics, which seemed rather irrelevant to their other studies.

The Harvard program shows the essential link of physics with history, mathematics, social studies, and other subjects. For example, in the first unit—Concepts of Motion—besides becoming acquainted with modern equipment for tracking and analyzing motion, students are transported back in time to confront the problem of measuring motion as it existed in Galileo's era. The text tells the story of physics—how each great discovery was made in its own historical setting. It shows that the principles of physics were not abstract concepts which suddenly appeared out of the blue but were ideas generated by some men and built upon by others over the centuries.

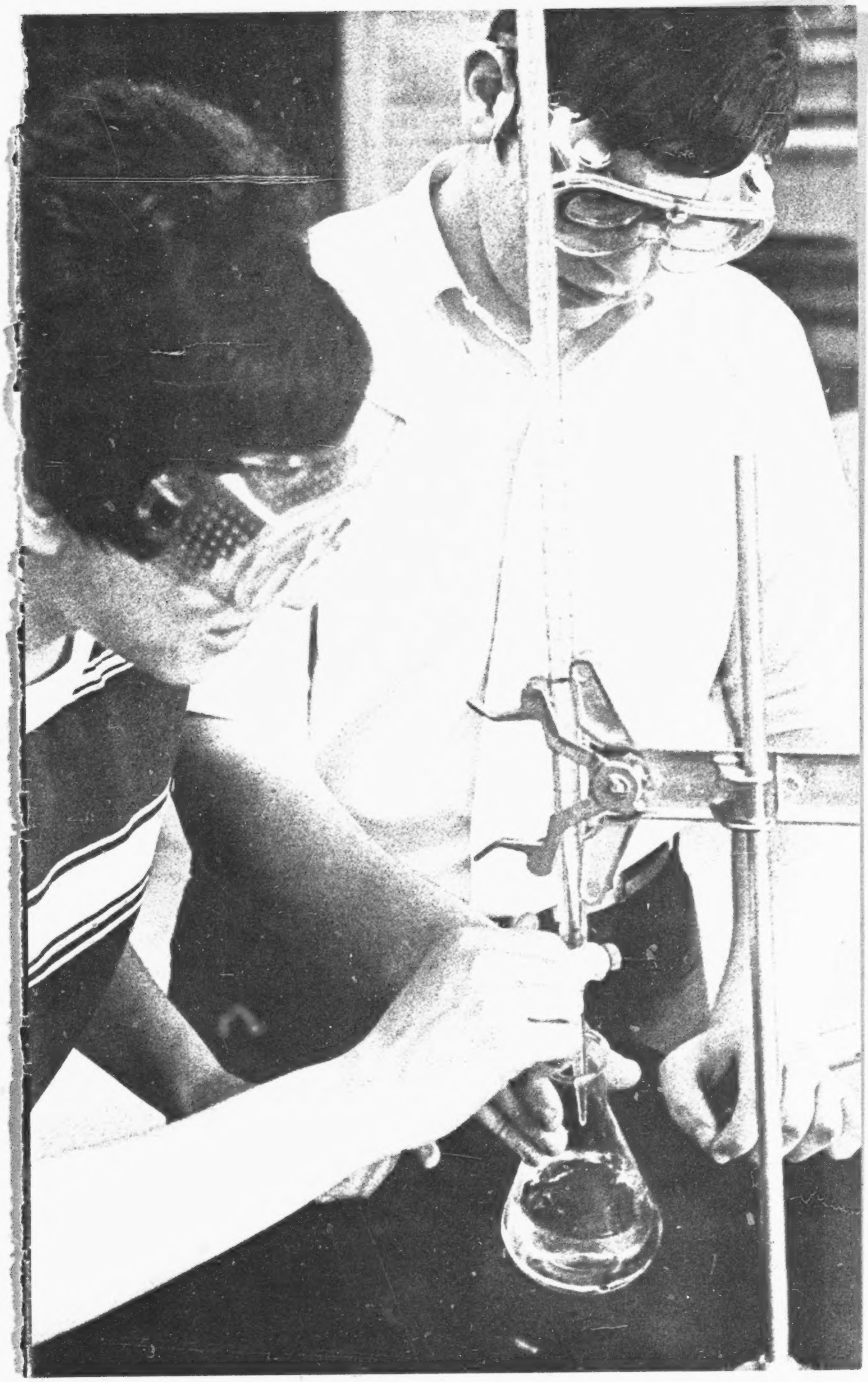
However, the work is not all historical. In fact, the laboratories are very modern in the apparatus and techniques used. In the study of motion, for example, students conduct experiments using polaroid cameras and stroboscopic lights. Each student has his own photographic record of the motion (however complex) of an object which he can then analyze by the contemporary methods developed in class. In addition to the program for general students, special units for the more scientific minded



have also been developed with greater emphasis on the technical aspects of physics.

Dr. Thorpe, who already held an award from the American Society of Physics Teachers for the excellence of his West High School Program, added Harvard physics to his curriculum 3 20/ years ago. Since then enrollment has more than tripled. One reason for its popularity is that it reaches beyond the male realm for which physics courses have traditionally been reserved.

"We used to be surprised to find one girl in a class," Dr. Thorpe remarks. "But Harvard Project Physics classes generally enroll at least 30 percent girls." Project directors have also been pleased with achievement tests given in 1967 which showed a considerable gain in student comprehension of what physics is all about.



new english . . . the quiet revolution

While sweeping reforms in math and science have been catching the headlines over the past decade, a quiet revolution has been working its way into English classes. In schoolrooms and universities alike, teachers have grown more and more convinced that literature,composition, and even standpat grammar were due for a major face-lifting.

According to Dr. Albert R. Kitzhaber, past president of the National Council of Teachers of English, "The English curriculum had accreted odds and ends of instruction—career advice, orientation to high school, formation of good study habits—that obscured its essential nature. The material in the curriculum was badly out of date." Dr. Kitzhaber directed one of 16 curriculum study centers located at various universities which began the search for a "New English" in 1961 with support from the U.S. Office of Education under the Cooperative Research Program.

At Carnegie-Mellon University's study center in Pittsburgh, Pa., the quest for a better English curriculum began with literature. "Literature is mankind's record, expressed in verbal art forms, of what it is to be alive," says Dr. Robert Slack, head of the Carnegie effort. "Yet, in the typical high school course, students don't read exciting literature at all; they read a long analysis of the piece and a description of the author's life, followed by just 2 or 3 pages from the work itself," he said.

The Carnegie team felt that students should be reading literature itself, not someone else's interpretation. So they drew together a special curriculum composed of complete—or nearly complete—literary works for college-bound 10th to 12th graders. In 1962, they convinced seven Pittsburgh schools to try it out on more than 1,000 students.

Now after 5 years the schools are sold on the program. "The Pittsburgh schools have been revolutionized by the work the Carnegie people did," says Mrs. Mildred Dunham, a Penn Hills high school teacher who has used the "New English" several years. "My students are constantly reading to find out what the author is really talking about. The program offers great depth and breadth."

Designed to give students a real sense of literature's meaning, the selections range from *Julius Caesar* to *All Quiet on the Western Front.* Sophomores dip into world literature to see how universal human concerns—love, heroism, the search for wisdom—have been treated. Juniors explore how these values fare in the American cultural setting, looking at the Puritan attitude and the drive for success through such works as *The Scarlet Letter* and Ben Franklin's *Autobiography.* Seniors give English literature the same kind of scrutiny.

Carnegie's "New English" uses inductive teaching intended to turn students into questioning, critical readers. "We try to have them read the selections with no commentary from the teacher," explains Dr. Slack. "Teachers don't lecture in the traditional sense but ask questions outlined in their manuals which lead the students to discover the meaning of each work themselves."

Results indicate that this is just fine with the students. When Wilkinsburg High School was split up, the entire senior class signed a petition to take the "New English" to their new school. Students in Taylor-Alderdice High liked the program so much they offered to pay for their own books—$30 in paperbacks. The cost of the paperbacks—one of the major drawbacks—will be remedied when a complete anthology is published. Despite the cost, Dr. Slack has received thousands of requests for lesson plans, and schools as far away as Texas are planning to adopt the materials.

And according to teachers, the program pays off. Mrs. Dunham found that college literature gave most of her graduates no trouble. "In 85 percent of the cases, college students report great success," she notes. "They give the credit to the New English."

English reform devised at Northwestern University's curriculum center has come to Chicago schools in the guise of "The Fall of Icarus," a painting which frequently appears in composition classes. What is a painting doing in an English class? Mrs. Rita Hansen, a teacher working with five Chicago area schools, has found it invaluable for teaching something indispensable for good writing—the art of observation.

"First," says Mrs. Hansen, "I give students three seconds to look at the painting. They see the ship and the sea, but most miss Icarus. Then they look for 5 seconds and they notice a little more. Lastly, I let them study the picture for 5 minutes. This time they find a wealth of detail. I've used the technique with everything from seniors to lower graders, and in any case, it makes the point: you have to be taught to observe the things around you."

Mrs. Hansen is just one of many Chicago

teachers who are using "New English" materials developed by Dr. Wallace Douglas of Northwestern's curriculum study center. Professor Douglas' work grew out of two convictions—first, that students did not write nearly enough in school; and secondly, that if they were to write, they would have to have something to say. "The key," says Dr. Douglas, "is to get youngsters to want to express themselves and to get them to talk and think about what is happening. We want to teach children really to 'see' the things they pass on the way to school—sounds, sights, smells. Writing grows out of interest; it should not be a finger exercise."

In Mrs. Hansen's classes, students don't receive red marks for punctuation and spelling errors unless they ask for them. Corrections are then discussed in a private conference, keeping the student and teacher in a one-to-one relationship. "The unorthodox system works," says Mrs. Hansen. "When children know their papers will be printed or put up on the board, you just don't get sloppy papers. Punctuation and spelling have improved greatly. When they know they won't be penalized for spelling, students don't write 'Dick and Jane' sentences."

Originally written for grades 7 to 12, the lessons have been adjusted for students in the lower grades. When Mrs. Osanna Nesper, a teacher in Chicago's Shepard elementary school, decided to adapt the see-and-write method for disadvantaged fourth graders, she found it improved their reading and writing so much that they were 8 months ahead of students the same age in the regular school program.

The children in Mrs. Nesper's class—and in 17 other pilot schools in Chicago—are showing that children can learn to write by doing it. "They should learn writing naturally," explains Professor Douglas. "If they watch what happens around them, even children with relatively drab lives can find something interesting to say—such as one fourth grader who wrote a delicate, fascinating description of a mud puddle."

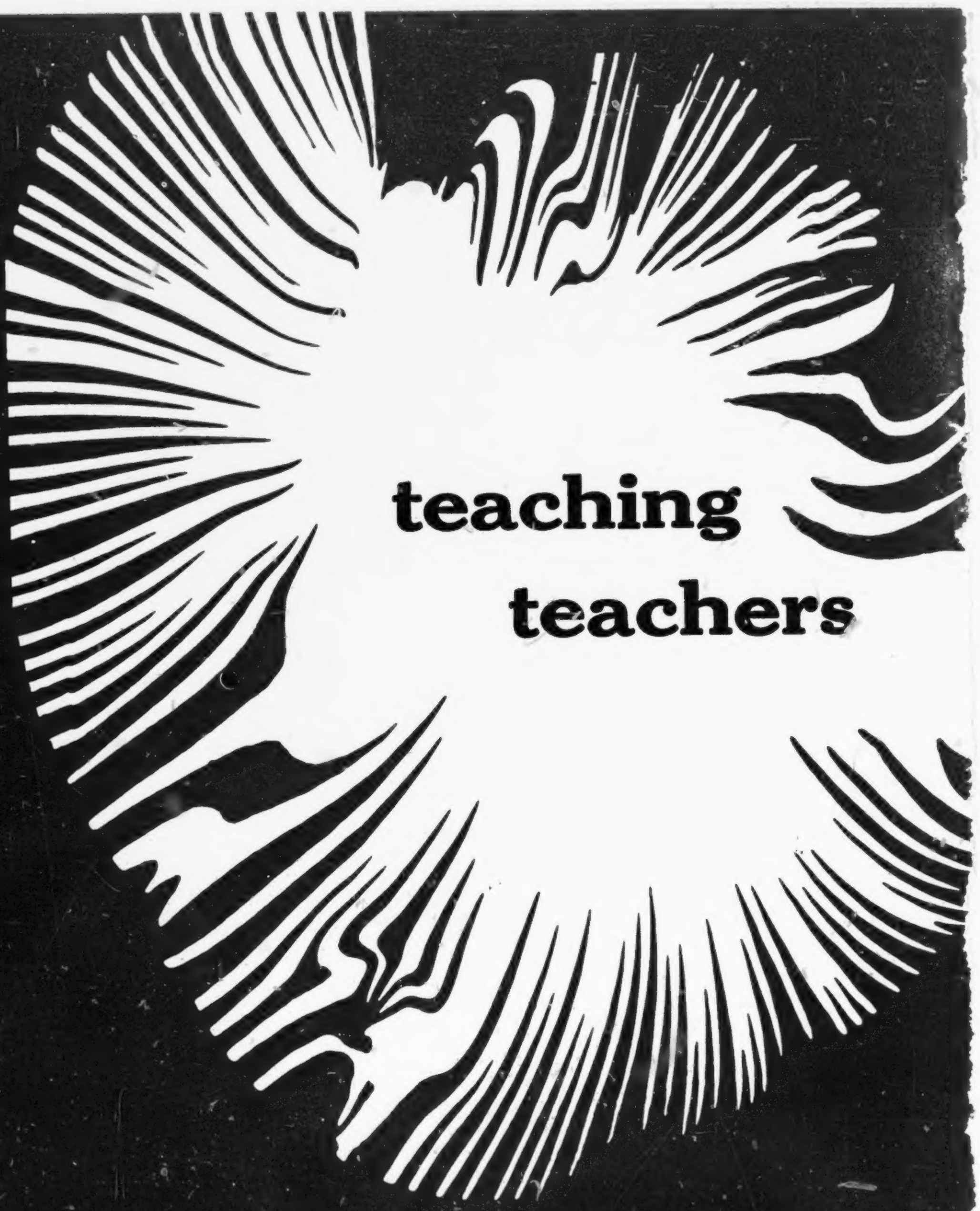
At the University of Oregon's "New English" project, the accent has been on grammar—on making language arts materials used in the classroom measure up to the things that professional linguists know about English. To do this, Dr. Kitzhaber's staff uses a scientific approach to language that resembles the astronomer's approach to celestial plotting. "We look for the basic structure of language that we know must be there," he explains.

The name given to this new language study is "transformational grammar." Students learn how parts of speech in a sentence are "transformed" in different types of sentences, then formulas register the principles of sentence structure. For example, the units in a simple transitive declarative sentence like "the cat ate the rat" might be represented thus: NP+Aux+V+NP. To adults, this may be Greek, but to the youngsters it's a magical key to understanding.

"The aim is to encourage students to examine the underlying principles of English—to learn the way their language works," says Tom Lorentzen, a Seattle teacher with 16 years' experience who began using the Oregon materials exclusively in 1966. "I find that this way, the kids really develop enthusiasm for examining language. They hold discussion sessions about grammar."

Oregon's "New English" also offers students a glimpse of the history of their language, such as the fact that in Shakespeare's time, "beat" and "beet" were pronounced differently. As a source for high school term papers, the Oregon staff compiled a "Casebook" with articles from *Time*, *Seventeen*, and other magazines, and written by contemporary authors like David Riesman on subjects that interest teenagers.

In addition to the seven pilot schools in Washington and Oregon, Dr. Kitzhaber notes that his materials are being used by many English teachers who attended the National Defense Education Act summer institutes. Over the past three years, "New English" materials developed at curriculum study centers have been presented to several thousand teachers through the institute program. As a result, English teaching will never be the same.



teaching teachers

In Salinas, Calif., a young teacher recently had a chance to see herself as others—namely, her pupils—see her day after day in class. It was done through microteaching, a new teacher training technique that places the teacher on camera, then lets her watch her performance on instant videotape replay.

"I was horrified the first time I saw myself on videotape," says Alice Gill, a microteaching graduate who took a 3-week course in November 1967. "My voice sounded hard—I wouldn't want to listen to myself all day. My movements were stiff, too. And everytime I asked a question, I posed like the 'Thinker' with my hand under my chin. Children were watching my hand instead of thinking about my questions."

Miss Gill was not acting during her brief video performance. Instead, she was teaching a real lesson to a live class of about five students. The miniature class and short lesson—which lasted about 20 minutes—gave her a chance to practice new ways to ask questions and by watching the replay, she could observe just how well she was doing. She was taking part in a field test of microteaching carried out by the Far West Laboratory for Educational Research and Development in Berkeley, Calif. The laboratory is one of 20 supported by the U.S. Office of Education designed to bridge the gap between educational research and educational practice.

The teaching is "micro" because each course is designed to get across only a few very specific points about teaching. But it attempts to make these fine points very clear to the teacher who is learning new skills. "We sort out the specific skills that go into the complex art of teaching," says Dr. Walter Borg, director of the laboratory's teacher training program. "We're trying to demonstrate that good teachers are taught, not born." The laboratory hopes to develop about 20 minicourses, each of which will demonstrate a different teaching skill.

In her minicourse, Miss Gill was studying how to ask good questions effectively. Did she answer her own questions without giving the pupils a chance? Did she repeat questions, thus wasting valuable classroom time? Did her questions make her fourth graders think? Or did she talk so much that there was little time left to ask questions, let alone answer them?

For the first "mini-lesson," she watched a model teacher demonstrate good questioning techniques on videotape. Then Miss Gill prepared a short lesson designed to illustrate what she had learned about questioning and practiced it on a small experimental class. Her teaching was filmed on videotape so that she could go back and check up on herself. Then fired with new insights, she retaught the lesson and evaluated the new videotape, this time with a colleague who was also taking the minicourse.

The minicourse on questioning was tested in 12 California schools by about 48 teachers, many of whom volunteered for the experiment. Of these, the laboratory reports, 44 were enthusiastically in favor of the microteaching approach. Miss Gill, who was selected by her superiors to take the minicourse because she was the least experienced teacher in the Salinas school, wound up praising the microteaching method. "There's nothing like seeing yourself," she noted. "What you think might be a good question may not look that way at all on tape." Perhaps never before in her teaching career had her weaknesses and faults, as well as her strengths, been made so clear to her.

Videotapes made several weeks after the microteaching course showed that the trainees improved their questioning techniques. For example, pre-tapes showed that the teachers answered their own questions an average of 8.8 times during the first 20-minute lesson; post-tapes showed them answering themselves only 1.3 times.

Although the Far West laboratory has done pioneering work to adapt microteaching for training inservice experienced teachers, the technique originated at Stanford University, where it was used to prepare student teachers. "We were looking for an experimental teacher education program," says Dr. Robert Bush of Stanford, "for liberal arts students who had been told that all there was to teaching was to know your subject." The Stanford professors felt that practice teaching came too late; they hoped that simulated, small-scale teaching situations might be a better answer.

"We had a student teacher give a 5-minute game to a class of five kids," Dr. Bush recounts. "They were encouraged to act out roles: one was a know-it-all, one was a disrupter, and another played 'dumb.' For some of the demonstration lessons, we told them that if they grew bored, they could bang on their desks and otherwise let the teacher know about it. We called it teacher-torture."

Later, the Stanford educators began using genuine teaching situations and real students. Although prospective teachers still taught the miniature lessons, they taught their own subject as they would in a regular classroom. After

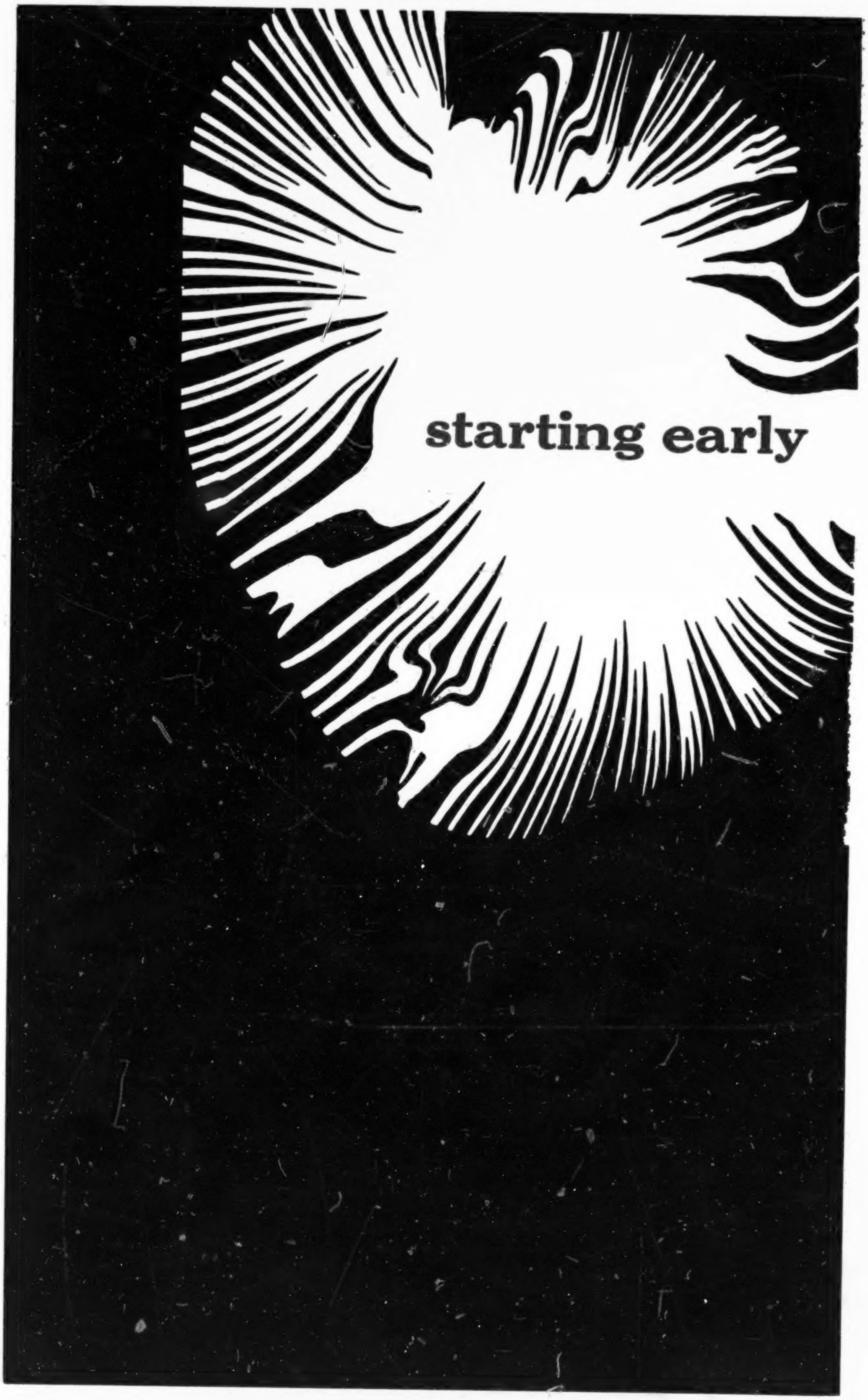
3 or 4 years the Stanford group hit upon using the brief teaching sessions to concentrate on specific, well-defined skills, and microteaching took on its present shape.

34/ Although most of the early work on microteaching was supported by the Ford and Kettering Foundations, Stanford received funds in 1965 from the Office of Education to form a Research and Development Center in Teaching, where microteaching was refined and feedback methods—such as the videotaping—were polished. The center is composed of 20 research specialists in anthropology, sociology, psychology, and education who are devoting a large part of their time to studying the problems of teaching. About 40 predoctoral research assistants also work at the center, developing their own educational research skills. Founded by Dr. Bush and by Dr. Nathaniel L. Gage, the Stanford center is one of nine such research and development organizations supported by the Office of Education under the Cooperative Research Program. Each center is located on a different campus; each pulls together experts from all branches of the social sciences to work out a different problem in education.

Microteaching illustrates the value of such interdisciplinary work. "It has many different purposes," says Dr. Bush. "Besides inservice and preservice training, it can be used for research, for predicting how successful a teacher will be, and for evaluation."

Here are just a few uses of microteaching. It has been used at Vanderbilt University to help improve the skills of teachers at predominantly Negro colleges in the South; one California school is testing it to see how it works as a means of qualifying new teachers; it has been used by the Peace Corps and Head Start to equip teachers for unfamiliar situations.

Other educational laboratories are also trying various ways to use microteaching, and the Stanford Placement Office is receiving requests from colleges and universities which want to hire college teachers who can conduct the microteaching courses. Although the technique is new, it is spreading widely. Minicourses and microteaching may soon be standard idiom among teachers and student teachers in America.



starting early

In Denver, Colo., educators have come to accept something that American mothers have always suspected: that average kindergarteners—not just the precocious ones—aren't too young to learn to read.

Denver's early reading program spans kindergarten through grade five. It is supported by the U.S. Office of Education under the Cooperative Research Program and carried out by Paul McKee and Joseph Brzeinski for the Colorado State Department of Education. Their work has proved that, with the right materials, average youngsters can start learning to read sooner than many educators had believed.

The reading program's success has created a small revolution in early childhood education circles, where dogma has held that 5-year-olds were just too young to start reading. Kindergarten teachers have traditionally concentrated on developing a child's reading readiness, on improving his memory, helping him recognize colors, and encouraging other skills that will help when reading really begins in first grade. Since many school systems do not have kindergartens, the Denver program also provides materials for stepped-up reading beginning in first grade.

Even before Denver schoolmen completed the project, it began to have impact on other schools. Several cities, including Greeley, Colo., and Glenview, Ill., volunteered to use the materials while they were still being tested in Denver. Since the reading materials have become widely available, more than 800,000 children have used them, starting either in kindergarten or first grade.

It all began in the fall of 1960 when the Denver schools introduced 2,500 kindergarteners to 20 minutes of special reading instruction daily. In their first lessons, they learned letter forms, names, and sound associations. Then they moved on to identify words from letter clues and contexts.

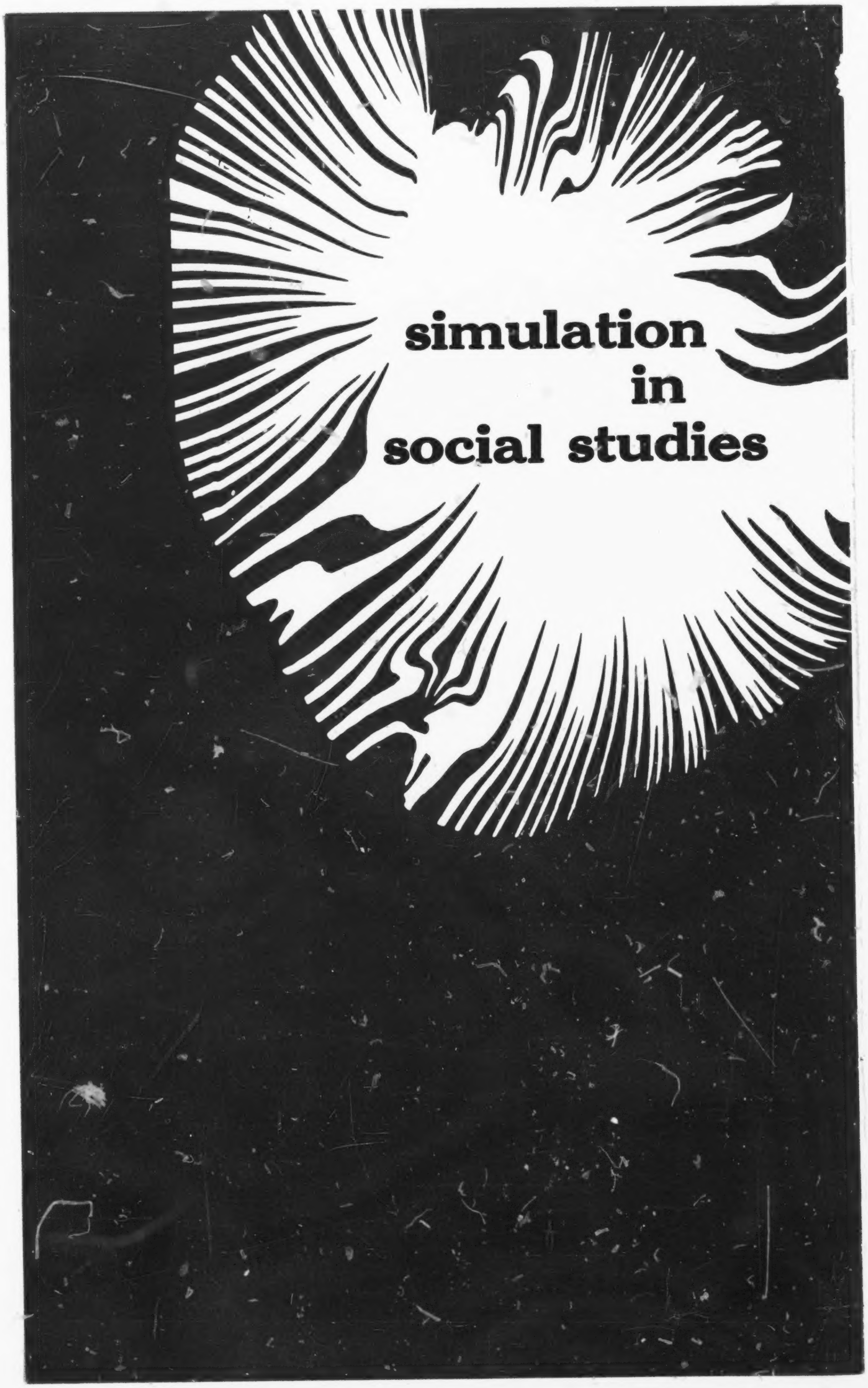
38/ For example, the teacher might say: "Bob went to the pet store to choose a pet. One climbed a rope. It was a ————." She points to an "m"; the child thinks a minute and answers "monkey."

Then 1,250 of these children kept on with the special accelerated reading program for 6 years. Researchers found that when these children left the fifth grade, they could read with much greater comprehension than children in the regular school program. In reading speed, their only close competitors were some children who came into the advanced reading program in grade one, after missing the special kindergarten materials.

But experience showed that unless the children followed the speeded-up reading program in later grades, kindergarten gains were lost. For those children who began reading in kindergarten, then went into regular first-grade reading classes, the advantages had disappeared by the time they reached the third grade.

Children who took the complete early reading program showed fast progress in subjects like word-study skills, language, and social studies, where reading proficiency is the key to success. The project turned up no evidence that early reading harms vision, creates adjustment problems, or makes children hate reading. On the contrary, teachers found that some children who did not really respond to regular kindergarten activities loved the new reading classes.

simulation in social studies



The girl stepped up on the platform and the bidding began. "Do I hear five dollars . . . ten dollars . . . sold!" barked the auctioneer, and the little blonde from Boston was led away by the new "master."

This make-believe auction took place in several Boston area schools recently. Its purpose was to give children from varied ethnic backgrounds some idea of how it would feel to be a slave. The episode is part of new lesson plans designed to add a new dimension—respect for racial and cultural diversity—to social studies.

The lessons were developed over the past 3 years by staff at the Lincoln Filene Center for Citizenship and Public Affairs at Tufts University, with support from the U.S. Office of Education under its Cooperative Research program. The developers hope to awaken pride in minority group children and also to help all students understand that rich cultural diversity has been the spice of American life.

As a first step, teachers take aim at stereotyping—the tendency to lump all members of "other" cultural groups into the same boat. "We want the children to examine specific individuals or situations," a member of the curriculum team emphasizes, "and we do not want overgeneralizing about people of any group or race."

Children are taught to see others first of all as individuals. They learn to observe interaction between individuals within the class, the school, and the family. One primary grade unit has the children brainstorming differences and "samenesses" in a common-sense fashion. "How are people the same?" The children

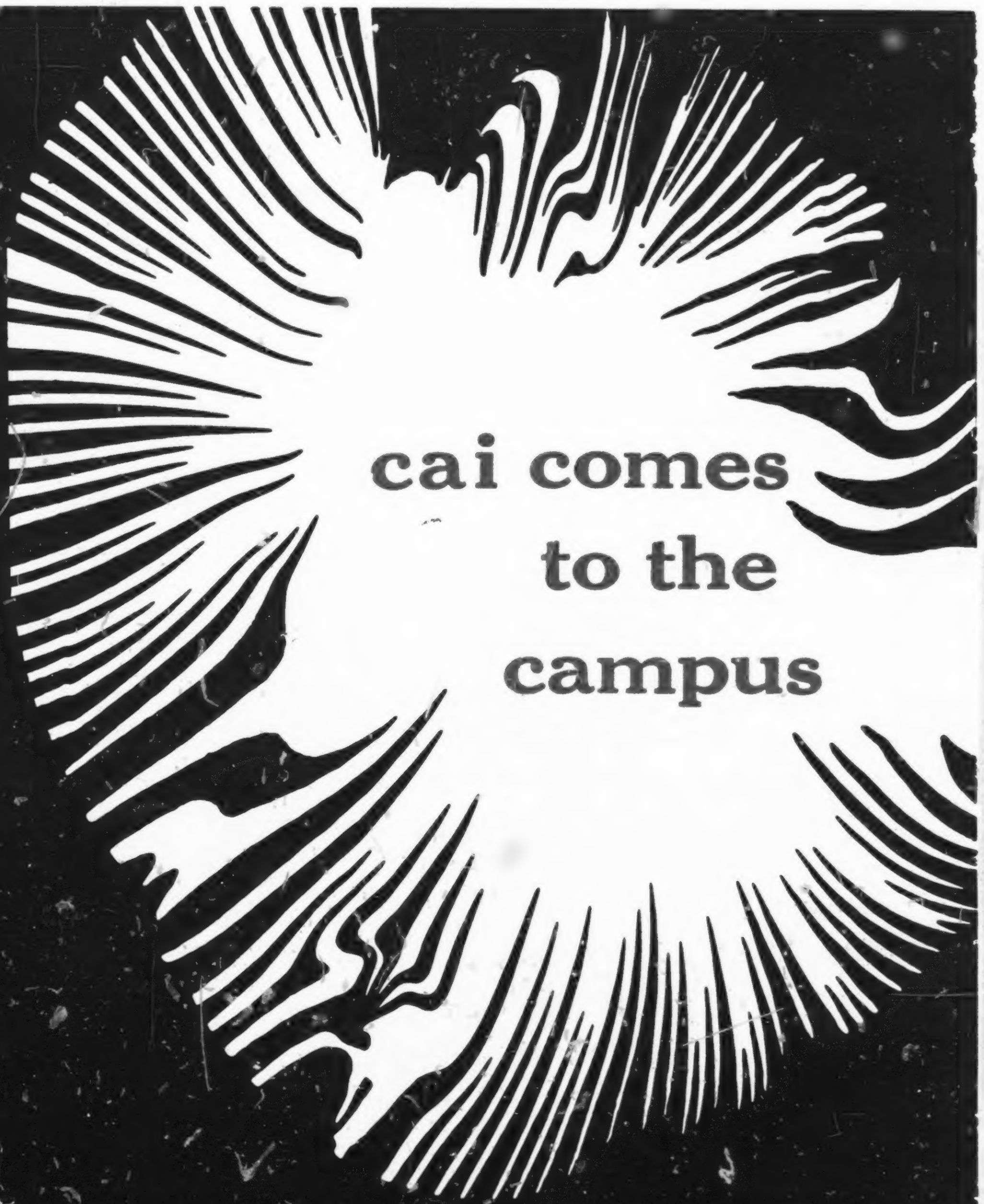
answer, "They have eyes, nose, mouth, hair; they feel happy, sad, hungry." In the lesson unit on "Who Is an American," children trace their own family histories and begin to learn that all Americans came from somewhere else, even the Indians, who probably
42/ emigrated from Asia.

Older students are initiated to the processes of government and begin to learn how official policies are made. Through games, role-playing, problem solving, and other classroom techniques, teachers lead students to make appropriate social decisions. Fifth graders might be asked to decide if they should go to school, what books should be used, and other questions which affect them directly. Then they move to other matters such as: Why do people move into particular areas of cities? What does it feel like in a ghetto? Who runs the cities?

The Filene center staff was prompted to develop the materials because of a lack of social studies content about racial and cultural diversity. "For too long," says Dr. John Gibson, "members of the majority culture in the United States have received messages in instructional materials and other media which tend to portray the superiority of this culture. Conversely, members of minority groups, generally speaking, do not see themselves or their accomplishments."

The shortage of such materials, Dr. Gibson feels, is pointed up by the fact that the center has already received more than a thousand requests for copies of lesson plans—although they are not ready for widespread use since field tests are not complete.

Preliminary tests have been promising. The results of the Boston classes led the center staff to conclude that "stereotypic thinking" among the 84 fifth graders tested declined noticeably. A different kind of indicator came last summer at a special camp for the disadvantaged in Lowell, Mass. Before the sessions on racial and cultural diversity, Negro self-dislike abounded. At the end of the camp, pictures were taken. A teacher, Mrs. Lucinda Silk, tells of one Negro boy who didn't like his picture—his face was too fair. The photo was retaken and the boy's face looked darker. He was satisfied.



cai comes to the campus

At Florida State University, students are waiting in line to take a new physics course that's taught almost entirely by a computer.

The first accredited college physics course taught via Computer Assisted Instruction (CAI), the experimental program was developed at Florida State's Computer-Assisted Instruction Center with support from the U.S. Office of Education.

When CAI physics made its entree at Florida State in the fall of 1967, instructors had trouble rounding up 25 volunteers to give the computer a try. But during the following year, the machine made a hit; in the spring, 800 physics students were given a choice between the machine version and the traditional lecture method. Five hundred held up their hands in favor of the computer.

The computer teaches physics 107, a standard 3-hour elementary course which nonscience majors take to meet the college's science requirement. Like other students, the CAI users must master materials found in a standard physics textbook. Unlike other students, though, they attend no lectures. Instead, they come to the CAI center and take their instruction at one of the 30 computer terminals there.

The machine lets students schedule and pace themselves. No formal classes meet; on the contrary, each student comes to the center whenever he feels like it and picks up where his last lesson left off. "They work in spurts," explains Dr. Duncan Hansen, center director. "They keep at it steadily for several weeks and then take a break when they're bored with it. They come back refreshed, and it doesn't interrupt their understanding of concepts." Each student must finish the equivalent of 3 hours work a week during the term.

The system consists of three parts: the computer proper which directs operations; electronic files that hold the computer's instructions and 29 lessons for the students; and 30 TV-like terminals with typewriter keyboards where the students sit. In the first session, the computer introduces the student to a concept of physics, then tests him to see if he's gotten the point. If he masters the idea right away, he proceeds up a staircase of progressively more difficult concepts. If the lesson gives him a hard time, the machine detours him to practice problems and lets him go on only when he's ready.

The computerized course is no easy out for freshmen who can't stand physics, according to Dr. Hansen. "Students can sit in an ordinary physics class and not know whether they've mastered the materials. The computer checks their every step to see if they really know what they're doing." He tells of a number of students in the CAI class who were able to go back to the dorm and lucidly explain to their roommates what they had been learning in physics class. "The computer," he notes, "provides enough practice that even difficult concepts are mastered."

Dr. Hansen believes that the value of practice and individual instruction are evident from midterm and final exam scores. "While in conventional physics," he says, "students' performances slip downhill as the course gets more difficult, the CAI students remained fairly stable at a high level." Researchers were pleasantly surprised by the uniformly high results: at first, they suspected that slow students might be the main beneficiaries.

The Florida State computer also gives students homework assignments and compiles records of student progress. About half the material in the course comes directly from the machine; for the remainder, the computer directs the students to audiovisual aids and other special reference materials.

laboratory for progress

The lesson was about squares and circles and ellipses in the first-grade class in the San Antonio, Texas, school. Each child was given a square block for a cube, a ball for a sphere, and a pecan for an ellipsoid.

"Concha," asked the teacher, "may I see your cube?" And Concha held up the block.

"Now Juan, may I see your ellipsoid?" the teacher continued.

Juan ducked his head and looked embarrassed. Susan, Juan's neighbor, spoke up: "Juan ate his ellipsoid."

Juan, Concha, and Susan were in the middle of their language-reading class. But for a reading program, why science? Why ellipses? Because these children are just learning to recognize the sound of a strange new language —standard English.

Their school is working with the Southwest Educational Devolopment Laboratory (SWEDL) in Austin, Tex., to test new materials for teaching English to Spanish-speaking children. Their teacher is using a method which has produced fourth graders who read and write both languages fluently—something they formerly were unable to do in either language.

Most of the children in the San Antonio school are Mexican-Americans. The school capitalizes on their native Spanish, giving them intensive instruction in both the mother tongue and in English. Their reading materials also contain the beginning concepts of math, science, and social studies, so that linguistic problems do not close the door to learning in other disciplines.

Although mastering the language is the goal of the program, this is accomplished by building positive self-concepts in the children and by constant interplay of words and experiences between teacher and child and between child and child.

50/ "We teach the child to think of himself as someone important—important to the teacher, to his classmates, and to the community," says Dr. Elizabeth Ott, director of the educational laboratory's reading-language program.

Most of the children in the program come from deprived backgrounds. One teacher who traced the home situations of each of her 27 students reports that only three have what is considered "normal" homes, with both parents living with the children. Many of the families are, nevertheless, large. One child, asked to draw a picture of each member of his family, found himself with a massive undertaking—19 pictures to draw.

When a child arrives at school, he is not asked, "What is your name?" Instead, he is asked, "Who are you?" The answer comes proudly, "I am Juan."

Juan stands before a mirror and looks at himself as he says, "I am Juan." He is made to understand that, as Juan, he is a unique and wonderful person. He is taught that there is no one else like him, no one else with his capabilities, with his smile, no one else who has a sprig of hair that falls across the forehead in just his way.

The teacher moves with him toward the other students. "Who is he?" she asks. "He is Juan," they answer. Before they know it, the children have begun using English pronouns and had experience in sentence-making.

From self-identity, the children move toward an understanding of themselves as members of a family. From the family they turn to the school. The teacher has made a cardboard facsimile of the schoolroom, with little chairs and puppets sitting in the chairs. Using this model, the children locate their places and say, "This is my table. This is my chair . . . "

Next the children learn about the community. With milk cartons, the teacher builds the houses of the city, and with miniature signs, she labels the streets. Soon the children can locate their houses and say, "This is my house. It is 1610 Laredo Street."

Throughout all of this the teacher is in the middle, constantly stimulating conversation and enticing children to say the new words. While instruction is given in both English and Spanish, it is given at different periods for each language.

Reading in both languages is introduced early. Children learn to read quickly, since they have been taught to understand the languages orally and to use them in classroom discussions.

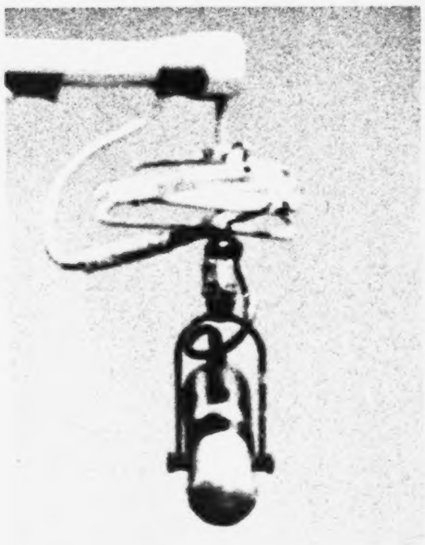
In the meantime, the children have touched base with mathematics, science, and social studies through their discussions. The science instruction program uses the American Association for the Advancement of Science materials because they are "culture-fair"—the background of the children and their previous experiences do not affect their ability to learn the AAAS science curriculum.

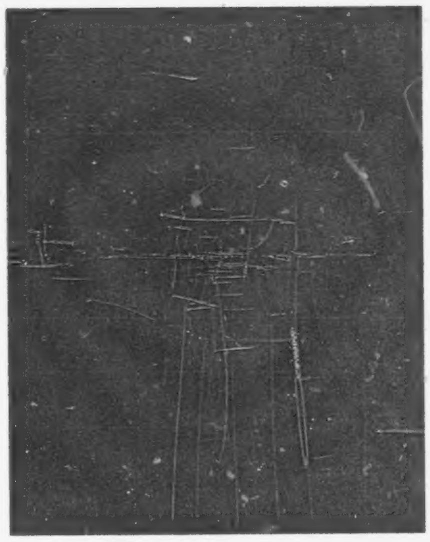
Social studies materials encourage pride in the Mexican heritage and culture. The customs the children bring home are welcome. For example, many Mexican-American children on their birthdays bring lollypops to school—enough for the other children, the teacher, the principal, and the school secretary. The birthday child pins a lollypop on each of his friends, making his birthday an occasion for giving to others.

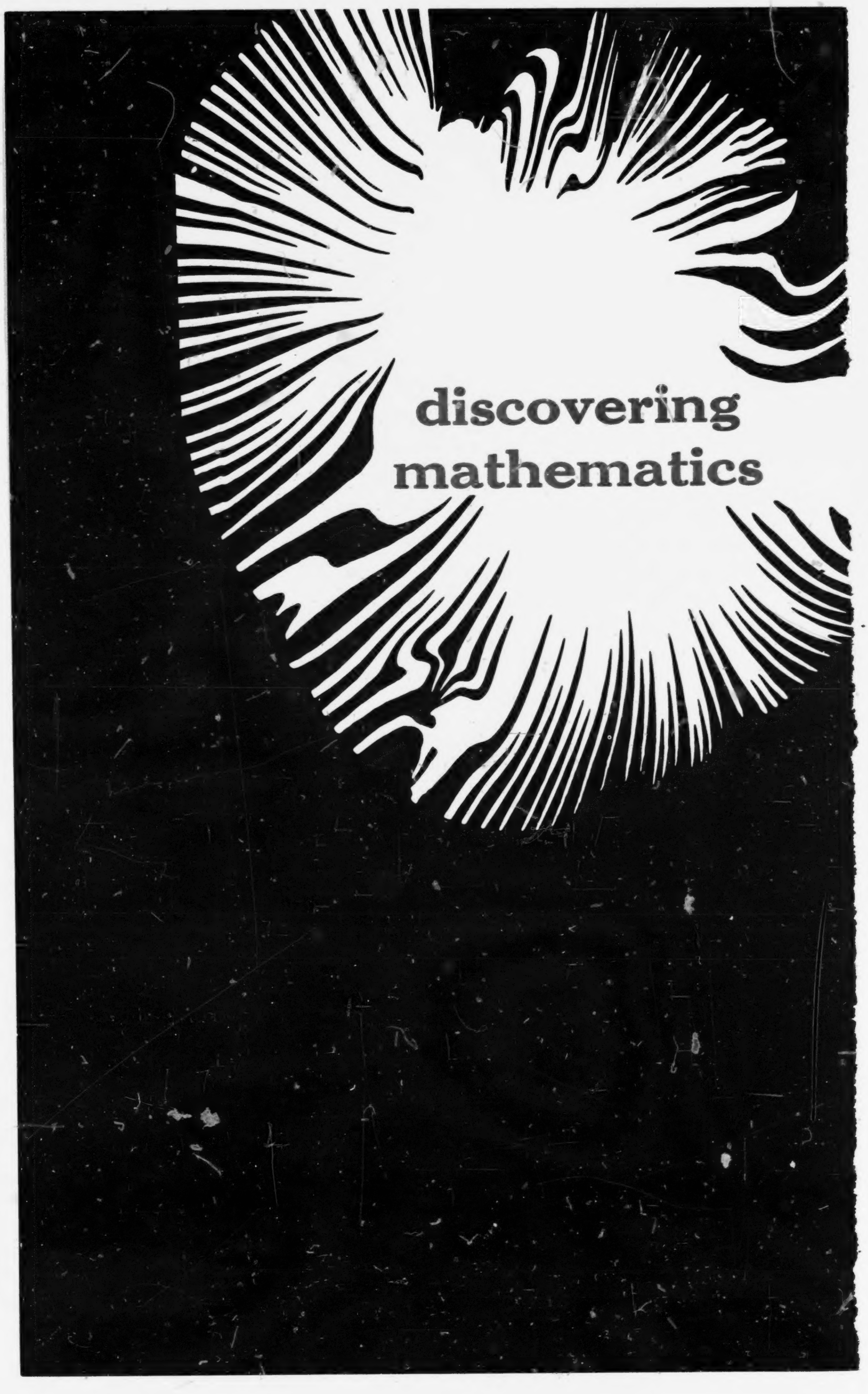
Even the school nurse can identify children in the special program when they come to her office. "They don't just point to their stomachs and say the one word, 'Hurt.' They tell me in complete sentences what is wrong. Then when they are feeling better, they talk about other things. I can almost see them bloom."

SWEDL began testing the new materials in September, 1967 in San Antonio, McAllen, and Edinburg, Tex., schools. The materials are also being used with Spanish-speaking children in New York City and San Diego. So far, nearly 5,000 students have been involved in the test program.

SWEDL is one of 20 educational laboratories launched by the U.S. Office of Education under Title IV of the Elementary and Secondary Education Act of 1965 to help schools develop and adopt educational innovations. The laboratory is also working to produce materials for use with the French-speaking Louisiana Acadians and with impoverished white children and Negroes. During the summer, it held institutes to train teachers to use the new English-Spanish materials.







discovering mathematics

To Dr. Robert B. Davis, a Syracuse University professor, the best way to improve teaching is to take a personal hand in it yourself. And for several years, Dr. Davis and about 200 other teachers who work with him have been carrying out this philosophy, helping revitalize mathematics teaching in big-city schools through the Madison Project.

The project takes its name from Madison Elementary School in Syracuse, N.Y., where Davis started a small-scale effort to reform elementary math teaching more than 11 years ago. Since then, the project has grown into a massive training service for teachers in some of the Nation's largest cities. A large part of this work has been supported by the U.S. Office of Education through the Cooperative Research Program.

The Madison Project curriculum introduces very young children to abstract mathematics and does it in an unusual way. Children are taught to learn mathematics by doing it—by getting involved in a problem, struggling with it, and by finding their own answers. The classes depend heavily on physical equipment, games, and other exercises which let children work out mathematical problems for themselves. Problems arise naturally from working with this equipment, and children discover mathematical patterns for themselves, rather than from textbook formulas.

"The idea is to get them to think for themselves," says Victor Wagner, a Long Island teacher who has been working with the Madison Project for more than 6 years. As proof of the method, Madison Project teachers can cite numerous cases where children are learning more math and enjoying it tremendously. "They start asking for graph paper to take home and you can tell they're doing math on their own," says Wagner.

Madison Project exercises introduce elementary school children to sophisticated ideas in geometry and algebra. Second graders start working with Cartesian coordinates and plus and minus numbers; children in grades 3-8 are given experience with variables, equations, inequalities, functions, measurement problems, and logic. Science is also worked into the math curriculum.

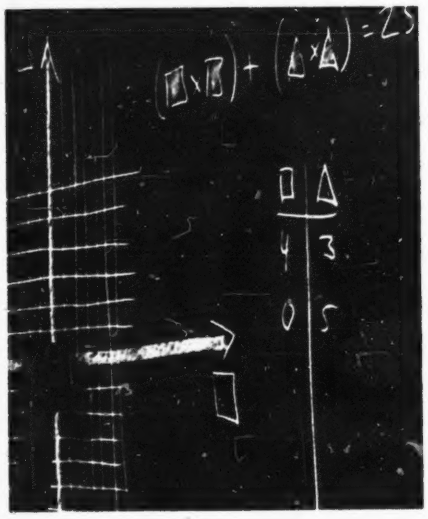
The exercises are designed not only to start youngsters working with abstract mathematics early, but to help make math an exciting, enjoyable experience for them, as well. They are encouraged to discover original, creative ways to solve problems and teachers are taught to appreciate their originality.

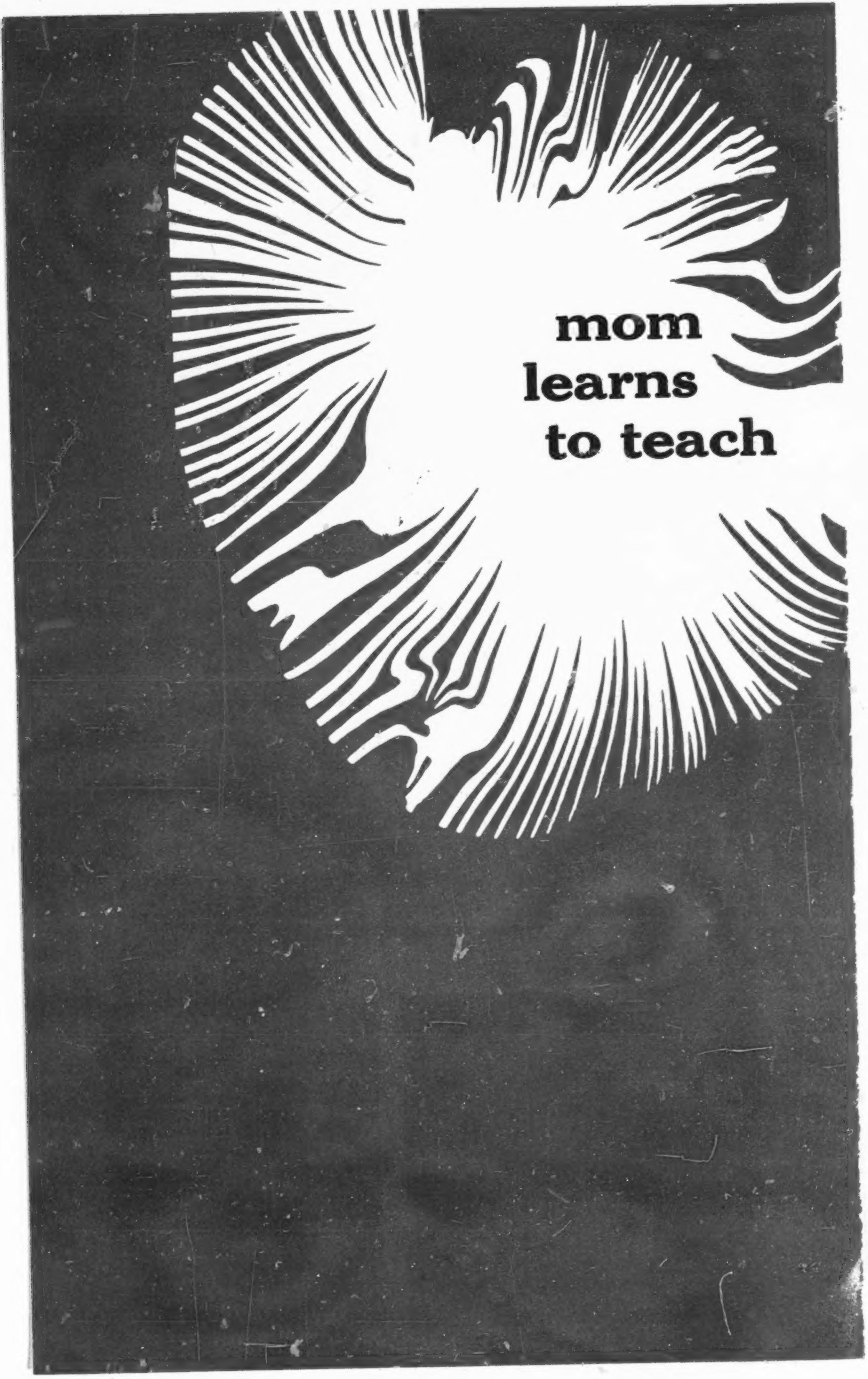
Besides curriculum materials, the Madison Project offers a new way of teaching math which Davis has illustrated in workshops in some of the Nation's largest schools. Davis recognized the need for a new style of teaching mathematics when he was at Syracuse University, helping elementary teachers get a grip on the new math in 1956. "They kept telling me that I just didn't understand the problems they faced every day in elementary schools," he recalls. "And since I had never taught below the college level in my life, I began to suspect that they might be right."

As a result, Davis began teaching elementary school classes at Madison School in Syracuse. There he began designing exercises which got at the heart of sophisticated mathematical ideas, yet were suited to the abilities and interests of young children. Since then, he has worked in elementary schools both in "privileged" suburban areas and in central city districts like Banneker in St. Louis and Cardozo in Washington, D.C.

Madison Project staffers have tried to improve big-city math curriculum in still another way. Each summer for the past 5 years, Davis and about 200 other teachers have traveled from coast to coast holding workshops where local teachers learn to use Madison Project techniques. "It was like vaudeville," Davis recalls. "We'd finish a workshop in one place on Friday and start all over somewhere else on Monday."

But as a result of these workshops, Davis and his teachers can take credit for reaching about 3,500 city teachers personally. And since newly trained teachers held local workshops where they showed colleagues how to use Madison Project techniques, thousands of teachers were reached indirectly in each city. Thus, the Madison Project staff has literally brought better math teaching techniques to schools across the country.





mom
learns
to teach

For nearly 2 years, Mrs. A. of Nashville, Tenn., took her preschool-age daughter to classes every morning. But this mother didn't just turn around and go home after delivering her child to the teacher; she stayed, because she had a special reason —to observe how professional educators "managed" her youngster. Now Mrs. A is using similar techniques to get her daughter's younger brothers and sisters off to a good educational start at home.

Mrs. A.'s family lives in a low-income housing project on the northern fringe of Nashville. Her children are, in current educational terminology, deprived. The "classes" she and other mothers in similar circumstances attend are operated by the Demonstration and Research Center for Early Education (DARCEE) headquartered at George Peabody College for Teachers. Educational researchers are looking for ways to overcome the educational disadvantages that plague children from impoverished homes.

At this center Mrs. A., hidden by a one-way mirror, quietly observed how the teacher worked with her daughter in class. After about 6 months of observation and coaching by the teacher, Mrs. A. was ready to move into class and work with the children. She learned to draw the children's attention to books and pictures, and to lead lessons and games herself. Like many of the mothers, she was amazed to see that her daughter really wanted to learn.

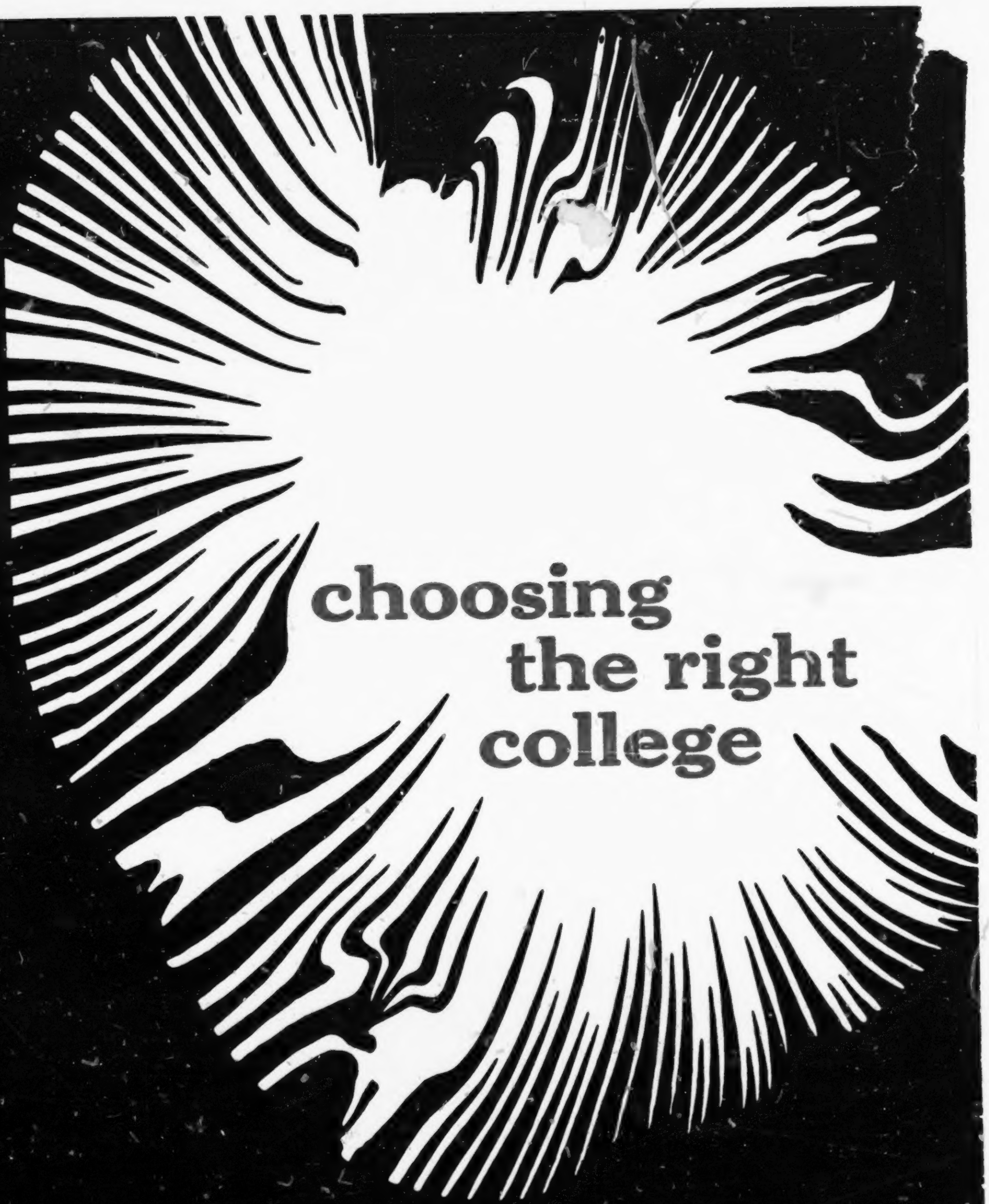
Through conversations with the teacher, Mrs. Della Horton, she began to understand the purpose of everything that happened in the classroom—how to reward children for being good, for instance. Said one mother, “I used to whip Billy and yell at him, but now he will pay more attention when I hug him or tell him what a good job he’s done.” During 1967 DARCEE staff members were in even closer contact with the mothers in this special program, visiting in their homes and helping them plan their “assignments.”

This training program for mothers is only one arm of DARCEE’s effort to find better ways to educate disadvantaged preschoolers. In another north Nashville preschool there are 20 children enrolled whose mothers do not come to school with them. Staff members reach 20 other families through a home visitation program. Besides the north Nashville center, DARCEE operates preschool classes on the George Peabody campus and in Fairview, Tenn., a rural area near Nashville. The Fairview center, founded in October 1967, is located in a county with one of the highest illiteracy rates in Tennessee; it is one of the first such centers in the country to concentrate on preschool problems of the rural poor. DARCEE also trains about 250 teachers, teacher aides, and other educational personnel each year to work with culturally disadvantaged children.

DARCEE is one of six such research organizations located at universities across the country where educators are finding new ways to teach young children. Collectively called the National Laboratory for Early Childhood Education, these organizations are supported through the Cooperative Research Program. Besides funds from the Office of Education, DARCEE receives support from the Office of Economic Opportunity for its training and demonstration work.

At DARCEE, researchers have worked with more than 150 children since 1966. The staff is testing a variety of ways—home visitations, preschool classes, programs for training mothers—to discover which methods most effectively educate disadvantaged children. "If we can find the principles of the deprived child's behavior," says center director Dr. Susan W. Gray, "we will be helping not just these children but all children."

choosing the right college



Just as he's getting used to new roommates and classmates, is the campus newcomer risking a personality clash with the college itself—a clash so severe that it might push him into the college dropout ranks?

The answer is almost certainly "yes," according to researchers such as Syracuse University's George G. Stern, whose work shows that campuses have a distinctive flavor which may be congenial—or uncongenial—to different types of individuals. Students, their research indicates, should keep personal as well as academic needs in mind when they go hunting for a college.

Counselors find that many youths still come to college with false impressions about what life will be like on campus. Others make poor college choices because they don't really know what they want.

To help prevent such misunderstandings, Dr. Stern, working in collaboration with several other social scientists, has designed tests to help counselors pair students with the campus climate that will suit them best. The tests consist of two parts, one designed to reveal the student's own personality traits, and the other to register what he expects from a college. The latter test can be used by students on campus to evaluate the climate of their college.

The tests measure such college traits as these: Does the college administration enforce conformity or does it permit students considerable freedom? Do professors stimulate free inquiry? Are students allowed to argue with teachers? Is the main emphasis placed on the practical aspects of getting a job? Or is the campus atmosphere characterized most of all by a spirit of fun and togetherness?

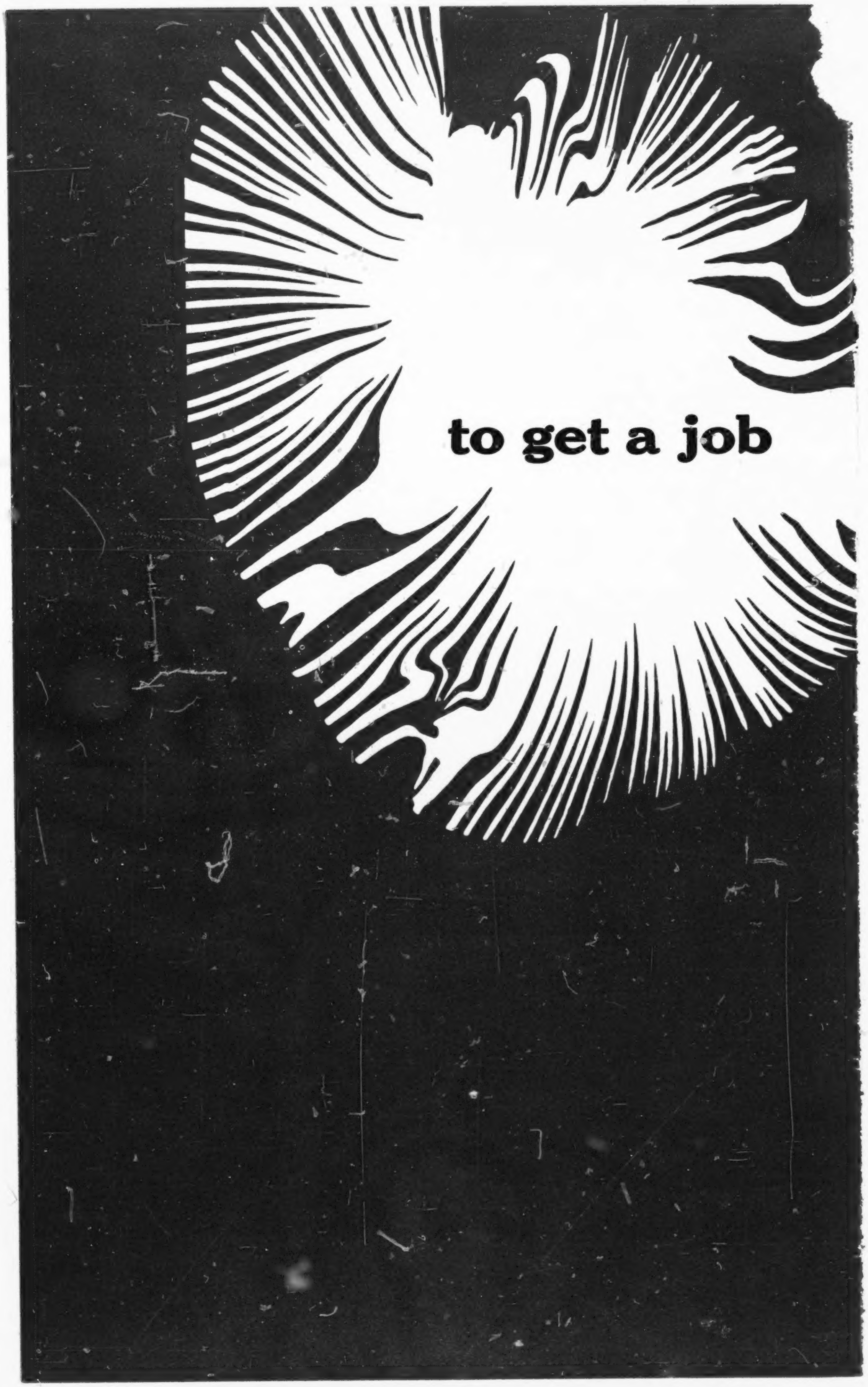
Research to develop the tests was carried on at a number of different colleges over the past 10 years; a large part of this work was supported by the U.S. Office of Education's Cooperative Research Program. So far, the tests have been used mostly by colleges which 66/ wish to take a closer look at their own campuses, but Dr. Stern foresees that counselors will be using the tests widely before long.

A case study that accidently came to Dr. Stern's attention shows how the tests might be used. The tests were given to new students at a large eastern university, and a few profiles of different students were drawn up from results. One of these was "Gail." From the tests, Dr. Stern could see that Gail was highly intelligent and was particularly high in verbal ability—it turned out that she was actually a promising poet. But she had little in common with most of her classmates at the university, who tended to be outgoing and not very serious. She was not particularly friendly or lively, and was not interested in clothes and boys. Instead she was dreamy and reflective.

If she differed from her classmates in personality, she was even more set apart by her opinion of the university. After being rejected by the Ivy League college she really wanted, she settled for the university. She was bitterly resentful and criticized the school and her fellow students—Philistines with no interests other than in having a good time, in her view. In other words, the tests predicted trouble between Gail and the university.

Sometime after the tests were given, Dr. Stern decided to check up on how accurate they were. He took Gail's profile—along with several others—to the personnel office. The counselors immediately knew who it belonged to, although they had not been told her name; they were well familiar with Gail by that time. Although she had been reasonably friendly and happy when she started college, she had grown increasingly distressed as the year went on. Eventually, she had found recognition with the English Department, where her poetic talent was recognized as a real "find," but it was too little too late. Before the year was out, she attemped suicide and dropped out. This was approximately what the tests predicted.

"Although one cannot say," explains Dr. Stern, "that the data obtained at the time of her admission would have averted Gail's breakdown, it is nevertheless clear that it could have provided rich insights into her behavior before she began having trouble. Her talents could have been appraised earlier, by the institution and not as it must have seemed to her, in spite of it. And," he adds, "we might have even explored the possibilities of establishing congenial relationships with other off-beat kids inside the dormitory situation."



to get a job

In Norwalk., Conn., a high school fully accredited by the State has a student body consisting exclusively of dropouts who want to learn a job skill.

An old fashioned one-story brick schoolhouse in Norwalk, Conn., is the unpretentious setting for an experimental vocational education program that is truly unique. Officially, it's just another high school, fully accredited by the State. But its entire student body is made up of what educators call "school alienated" youth: the almost 30 percent of America's students who probably won't make it through high school.

The only such job training program in the country operated as part of a school system. Norwalk's Center for Vocational Arts is a place where dropouts come to learn the skills to get a job. The Center is jointly financed by the Board of Education, the State Department of Education, and the U.S. Office of Education through the Vocational Education Act of 1963, which provides for a program of research and development. It reflects Norwalk's concern that the school system should be responsible for the students it loses as well as for its successes.

Some youths are referred to the center from other Norwalk schools; others just walk in off the street, according to Forrest E. Parker, acting director of the unusual school. The staff uses a combination of intensive counseling, small group instruction, and job training to get them on the right track to a job.

Founded in 1965, the school offers training in maintenance and repair, manufacturing, health services, retailing, office procedures, food services, horticulture, and automotive services. Classes are as job-like as possible: food service students run the school cafeteria; prospective mechanics fix tires and engines at a three-bay garage on the school grounds.

With 240 students ranging in age from 15 to 24, many of them from disadvantaged homes, the school has to offer a diverse program of basic instruction. Programed materials have been the answer in reading and math. A reading specialist at the school who found that reading ability in her class ranged all the way from second- to 11th-grade level depends on a large variety of programed materials which are keyed to student interests. With such lively reading fare as "*God Is My Co-Pilot*" and "*Hot Rod Age*," one student climbed from the sixth to the 11th grade in reading ability in one year.

Students "go to school" 3 hours a day, then work 4 hours on jobs in the area. The center prides itself on good teacher-student relationships and keeps class size down. Students can enter or leave the center any time during the school year. "They can get a certificate as soon as they've learned a skill," says Parker. "Their work is based on competence, not on sitting in a seat for a certain period of time." He notes that the school has no real discipline problems. "We keep them too busy and too interested to cause trouble."

Parker gives the main secret of the school's success as intensive, effective counseling. The center employs one counselor for every 25 students. These counselors take a sincere interest in the lives of their charges, help them with problems outside school, and help them find a job after they leave. The effect is shown by the story of one boy who came to the school and left after a few days. His counselor called him right away and urged him to come back. According to the boy, "That night I thought it over and decided that if a counselor was nice enough and thought enough of me to ask me to come back that I would be pretty stupid if I didn't."

As a measure of the center's accomplishment, Parker can point to 45 graduates in its second year—24 with job certificates and 21 with full high school diplomas. Eight of 10 students who come to the school have been placed in jobs. Some students have also gone on to higher education. In addition, the Connecticut State Department of Vocational Education has shown interest in the Center's methods of helping disadvantaged youths find work, and officials are thinking of expanding some of these approaches more widely in the State.

In Waco, Tex., a Technical Education Research Center trains technicians how to operate, repair, and maintain artificial hearts, kidneys, heart-lung machines, and other biomedical equipment suddenly emerging in today's technology.

Through an educational research organization based in Waco, Tex., Office of Education vocational education research funds are being used for another purpose: to make sure that vocational programs train people for today's jobs. In medicine, for example, a host of dazzling inventions—artificial hearts, kidneys, and heart-lung machines—have appeared during the past few years. Yet hospitals find that technicians to operate, repair, and maintain these machines are few and far between. Expensive lifegiving equipment often sits idle while a maintenance man flies in from a distant factory.

After discovering that no institutions offered programs to train technicians to handle this 72/ equipment, the Technical Education Research Center, a nonprofit corporation, decided to design a curriculum that colleges could adopt. Starting from scratch, it produced a 2-year program that was first put to use at the Springfield (Mass.) Technical Institute, which has one of the largest paramedical training programs in the country. Twenty prospective biomedical equipment technicians began classes there in the fall of 1967.

Their classes in math, physics, electronics, biology, chemistry, physiology, and English resembled standard junior college fare, but a special lecture series on biomedical equipment offered something different. There they came face to face with a whole world of medical devices—artificial organs, heart lung machines, blood cell counters, cardiac pacemakers, and others. John E. Abele, chairman of the Manufacturers' Advisory Board of the Association for the Advancement of Medical Instrumentation, uses the special class to explain and demonstrate just how these complex machines operate.

Abele trains the students to understand the workings of a wide variety of devices. "We don't want to make them specialists on one or two machines," he explains. "They should be able to use several. That way, they'll be more useful to the hospital, industry, or research laboratory where they'll probably work." Biomedical technicians get further on-the-spot experiences with the equipment by visiting physicians, manufacturers, research laboratories, and local hospitals.

In the fall of 1968, the new biomedical training program is scheduled to open at its next demonstration site, the James Connally Technical Institute of Waco, Tex. Although project staff stress that the curriculum is still experimental, they are already putting together a textbook, laboratory exercises, and films. Eventually, they hope to distribute videotapes showing manufacturers and physicians demonstrating the use of the machines.

Along with other signs of a rural America, farm job opportunities have been vanishing rapidly. Nevertheless, many youths—even those bred in the city—still hanker for the great outdoors. For these youths, ornamental horticulture is a new field which offers a lucrative outlet for skills traditionally found on the farm.

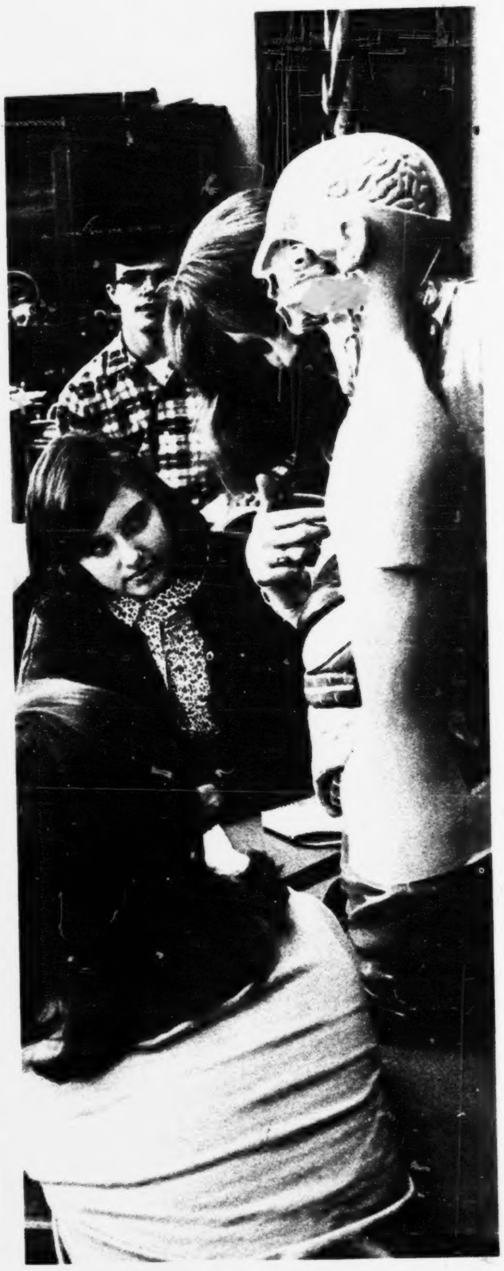
Recent surveys show that American homeowners spend about $3 billion per year on lawns alone; there are more than 6,500 golf courses in the United States which must be kept trim; garden centers and flower shops are flourishing. Even so, very few schools have been offering vocational training in the art of ornamental greenery. According to one Midwestern State supervisor, there would be many more school programs in his State right now if teachers were available.

To help furnish ornamental horticulture teachers for Midwestern schools, Dr. Paul Hemp of the University of Illinois directed a teacher training institute in the summer of

1966, financed under the vocational educational research program. Teachers from Illinois, Indiana, Kansas, Kentucky, Michigan, and Missouri attended and came back to their schools armed with instructional materials, laboratory plans, and other teaching tools. Dr. Hemp estimates that ornamental horticulture courses are being taught in about 30 high schools and colleges as a result of the institute.

According to one of the horticulture teachers, Mrs. Alice Dries of Danville (Ill.) Junior College, graduates have no trouble finding work. Mrs. Dries, who happens to be the only lady teaching ornamental horticulture in the State, says that last year each of her graduates averaged 11 job offers. Her classes included everything from high school dropouts to students with some college work; their ages spread from 18 to 60. Many were natives of nearby urban areas such as Chicago, and a few came from as far away as New Jersey and Florida.

According to Mrs. Dries, the lowest salary any graduate received was $5,200; the highest was $8,400. "A good floral designer can average $150 to $200 per week and there's a great demand for them," she says. "I don't think that's too bad for two years of post-high school training."



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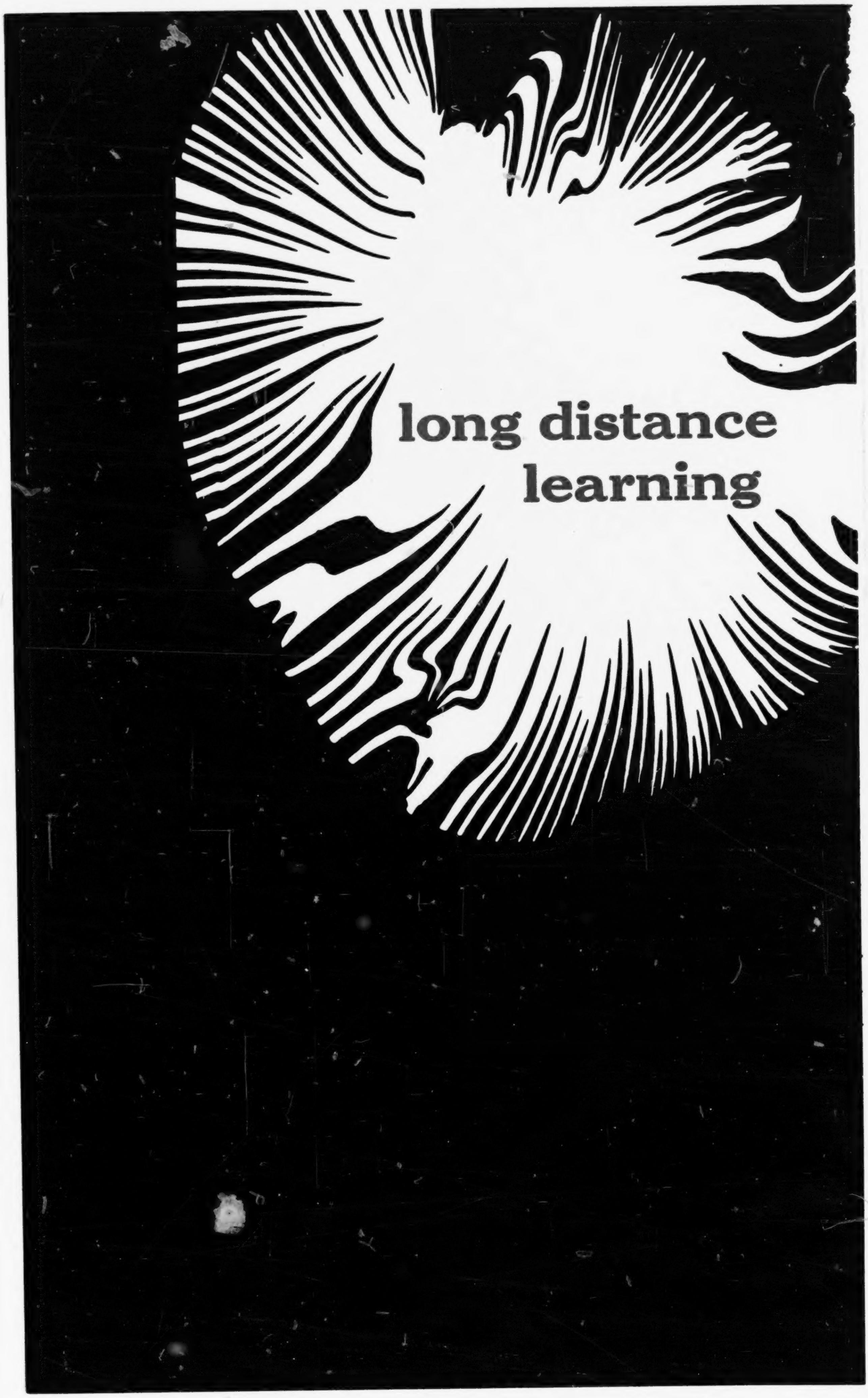


long distance learning

"Mr. Harris, tell Jule that he has exhausted our computer logic memory." The plaintive message clattered in on one of the school's teletypewriters. "Please advise him that he must wait several days until we get additional programs loaded."

Jule Thibodeaux is one of 13 students at the Universal Elementary School in McComb, Miss., who are learning symbolic logic in their mathematics class through Computer Assisted Instruction (CAI) developed at Stanford University. The project is funded by the U.S. Office of Education through Title IV of the Elementary and Secondary Education Act. His vehicle is a teletypewriter which looks much like an electric typewriter. His guide is a computer half a continent away on the Stanford campus, Palo Alto, Calif.

He and approximately 700 other pupils in the McComb city schools are taking part in an effort to determine if individualized instruction of mathematics by CAI is feasible for public schools.

Each participating classroom has a teletypewriter which receives and transmits information from a computer located in the Southwest Mississippi Data Processing Center in downtown McComb. This computer is connected by long-distance telephone circuits with a larger one at Stanford.

The computer had been carefully programed to provide McComb students with 30 complete lessons in symbolic logic—supposedly a normal year's work. But the programers had not reckoned with one Jule Thibodeaux.

A 12-year-old honor roll student with an eager, questing mind, Jule itched to get at the

78/ equipment as he hung around watching it being installed. He plied his mathematics teacher, Thomas Harris, with endless questions. Harris had just returned from Stanford University, where he was one of 20 McComb teachers who had been given a month's intensive training in computer-assisted instruction.

"When the system was ready in November and I took him to the teletypewriter, Jule fairly shot sparks," says Harris. The teletypewriter chattered its first challenge and Jule was ready to go. His prescribed 6-minute interval of instruction was over much too soon. Jule grabbed a few minutes at the machine at every possible opportunity. "Susie," he calls it. He pats it, he talks to it, he frowns at it, he argues with it.

In 38 school days Jule signed in on the teletype 130 times. In 8 weeks he had finished the year's lessons and was begging for more.

Max Jerman of Stanford's Institute for Mathematical Studies in the Social Sciences, the home base of the project, says Jule is "far out in front of all 198 logic students in the Mississippi and California centers presently taking our first-year logic program."

It's the challenge that intrigues Jule. He looks for it in basketball where he is trainer for a team. He seeks it in the game of checkers. "He'll challenge anybody, including me, to checkers," says Harris. "And so far, I'm the only person he can't conquer hands down."

"Logic gives me something to do where I have to think things out," says Jule, "It's like playing checkers except that I have to think harder to give the teletype the right answer."

Jule's chance to develop his abilities in logic might never have come about but for a chain of circumstances that uprooted him from his Chicago home and family and brought him to live in McComb. When Jule's mother became ill in 1965, Jule, Sr., who operates a laundromat in Chicago's South Side, was unable to take care of the couple's only child. He sent the boy to live with his grandmother, Nellie Kay Stovall.

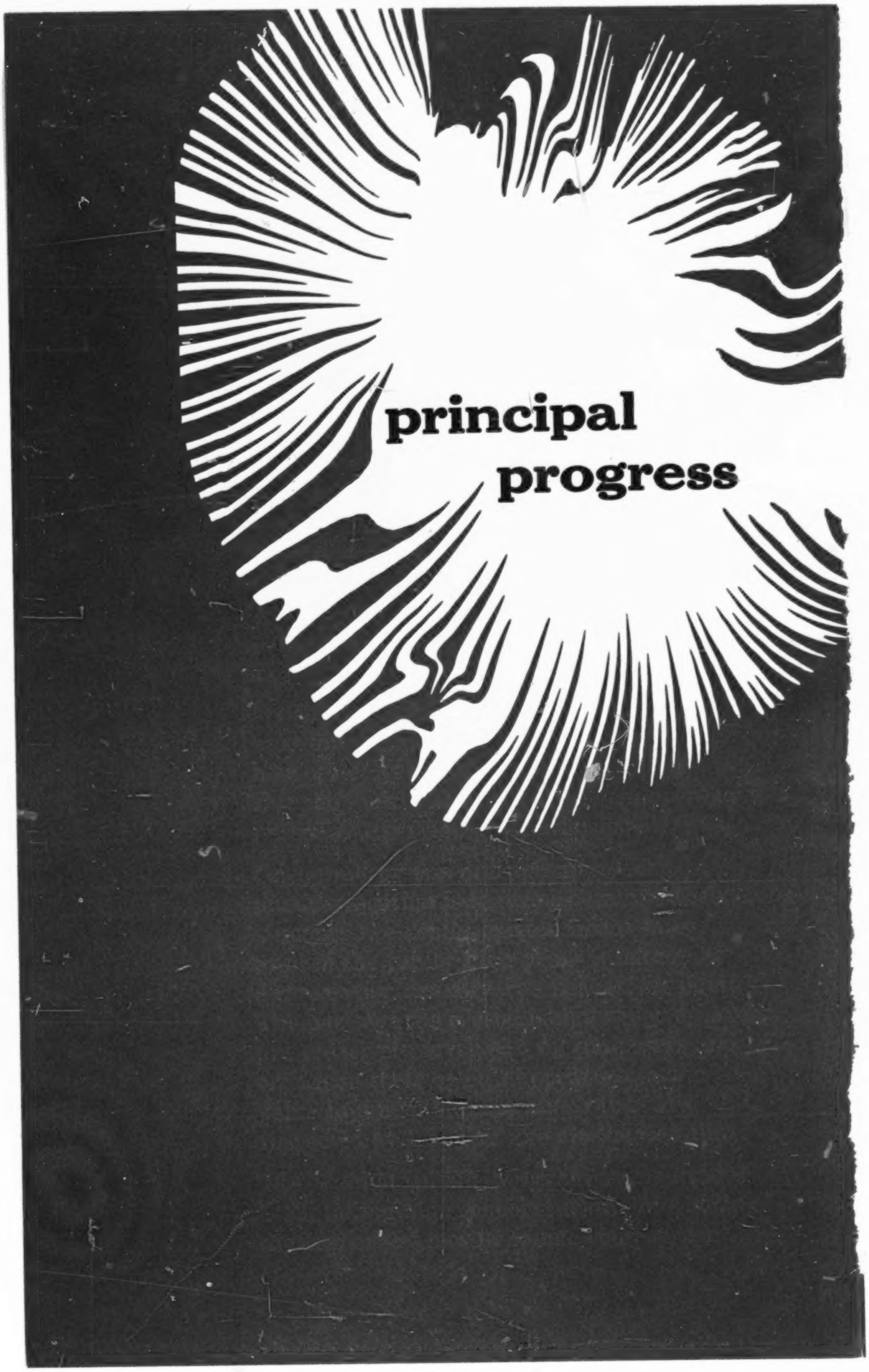
Now Jule spends the school year in McComb and his summers up North. And his brightest time, when the machine is up to it, is his daily session of Jule Thibodeaux-custom-tailored mathematics from the West Coast.

The computer's first educational messages were beamed in 1966 to Brentwood School, located in a predominantly Negro slum area of East Palo Alto, Calif. When Brentwood's first graders started classes that fall they entered the computer age: they spent part of every reading and math period with the computer terminals. This year, about 200 first and second graders are learning either math or reading from the computer-teacher.

According to Dr. Harlalee Wilson, manager of Brentwood's reading project, the youngsters love their patient, smooth-voiced "teacher." "They spend only 20 minutes a day with the computer, but teachers almost have to peel them off the machines to get them back to their classroom work," he reports.

Results, although incomplete, are extremely promising. Tests of 1966–67 pupils showed that after a year with the computer they were several months ahead of their peers in conventional classes. The CAI youngsters scored higher in recognizing and pronouncing words, in phonetics, and in vocabulary. Paragraph comprehension was the only skill in which they were not superior and there the difference was so slight as to be negligible. Tests of CAI math students have not yet been fully analyzed, but preliminary results show the CAI program is superior to the traditional one, according to project director Dr. Patrick Suppes of Stanford University.

Besides the Brentwood students, Stanford's computer is also giving daily arithmetic drills via teletype to 2,300 elementary schoolers in Kentucky, Mississippi, and the peninsula area of California. For college students, the computer offers a beginning Russian course on campus. Indications are that the first 30 Russian students learned their lessons at least as well as the non-CAI scholars. And the CAI collegians are very enthusiastic about the program, an attitude they seem to share with other students pioneering in one of the Nation's most interesting experiments in individualized instruction.



principal progress

When a principal takes over a job at a new school, how can he be sure to get off to a good start? How should he settle the ticklish problems that parents, teachers, and even students bring to his attention during his first few days at the school?

To help answer this question, materials have been prepared with U.S. Office of Education funds which simulate realistic situations new principals are likely to encounter. The materials consist of printed, taped, and filmed descriptions of problems which have actually arisen at typical high schools. The problems turn up in the in-basket of "Clare McCord," imaginary principal of "Madison High School." Trainees—either students of school administration or experienced administrators—tackle these problems, but do it as part of college courses or special workshops, where poor decisions have no effect on a school.

When the exercise starts out, trainees are given a large batch of information to familiarize themselves with the imaginary school and community. They spend approximately 2 full days studying a 197-page survey of the community, the school's legal code, a policy handbook, and a teacher's manual. They also watch filmstrips portraying school personnel, the students, and the educational facilities in the district.

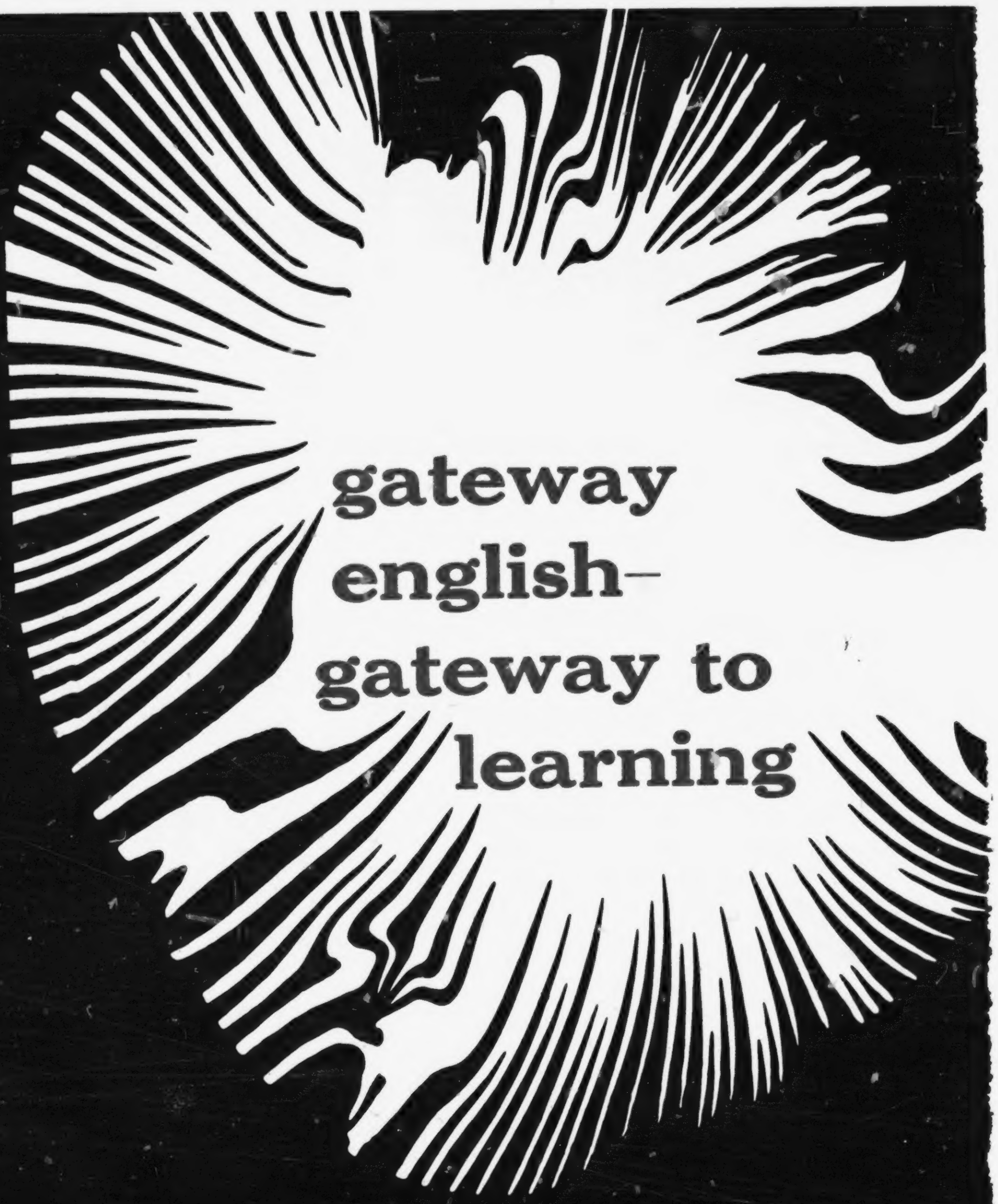
Then they are ready to start acting out the principal's role. Each student goes to a desk equipped with two in-baskets, both filled with problems. On the top is a letter from the mother of a school dropout who wants some answers about why the school guidance departments can't do more to help her son. Next there is a note from a teacher who's afraid that her innovative methods in social studies have led some parents to suspect that she's "teaching communism."

Then comes a problem recorded on tape: the president of the student council comes into the principal's office with a long sad tale about teachers who discourage their pupils' initiative and don't support extracurricular activities. He also wants permission to set up a student court, so that misbehaving teenagers will be punished; he feels that teachers often aren't even aware of what the troublemakers are up to. The trainee-principal is on the spot to cheer up his student council president and to find answers to long-range morale problems, too.

If these problems weren't enough, the principal also has to deal with a number of brief distractions, like the call from an irate citizen who feels that the school is doing everything wrong and the man from the heating plant who's going to check the school over tomorrow. There are also problems which test his knowledge of teaching techniques. Each trainee has 2 days to fill out his answers which are graded by an instructor.

Besides the simulation materials for the high school principal similar problems are available for the elementary principal, superintendent, assistant superintendent for instructional services, and assistant superintendent for business management. Some of the materials are designed for "team" instruction, where persons playing these roles work on problems together.

The role-playing materials originally appeared in 1961 under the title "Jefferson Township Simulation Materials." Since then, they have been used to train about 20,000 school administrators. An updated version has been made available which deals with some of the most current problems in school administration. Both sets were prepared under the direction of the University Council for Educational Administration, with assistance from professors at a number of universities.



gateway english– gateway to learning

What does Joe Johnson, a Negro youth who has never ventured far from Harlem, have in common with the English Victorians?

Not much, according to teachers from New York City—and from San Diego and Cleveland as well—who are finding that urban-bred children of minority groups usually have little rapport with most heroes of junior high school literature.

"Inner city children need something relevant to their own lives," says Mrs. Betsy Kaufman, speaking of her experience at O'Shea Junior High in Manhattan. "My students just weren't interested in *Great Expectations* and *David Copperfield.*"

Mrs. Kaufman also faced another problem at O'Shea which is not unusual in schools which serve the culturally disadvantaged. Her seventh graders—almost an even mix of Negro, Puerto Rican, and "other" children—read 2 to 3 years below their grade level.

Desperate literature teachers in similar situations have turned to English texts designed for the lower grades or have settled for assigning a bare reading diet of directories, job applications, and welfare forms. Instead, Mrs. Kaufman introduced her students to a new kind of reading program called "Gateway English" which was designed especially for urban disadvantaged children.

The acquaintance proved profitable. "The majority of my students jumped about 2 years in reading ability in 1965," explains Mrs. Kaufman. The program produced even more impressive results during a summer session, when a teacher reported that her 20 students in the 10th grade gained an average of 2.2 grades in reading during just 6 weeks.

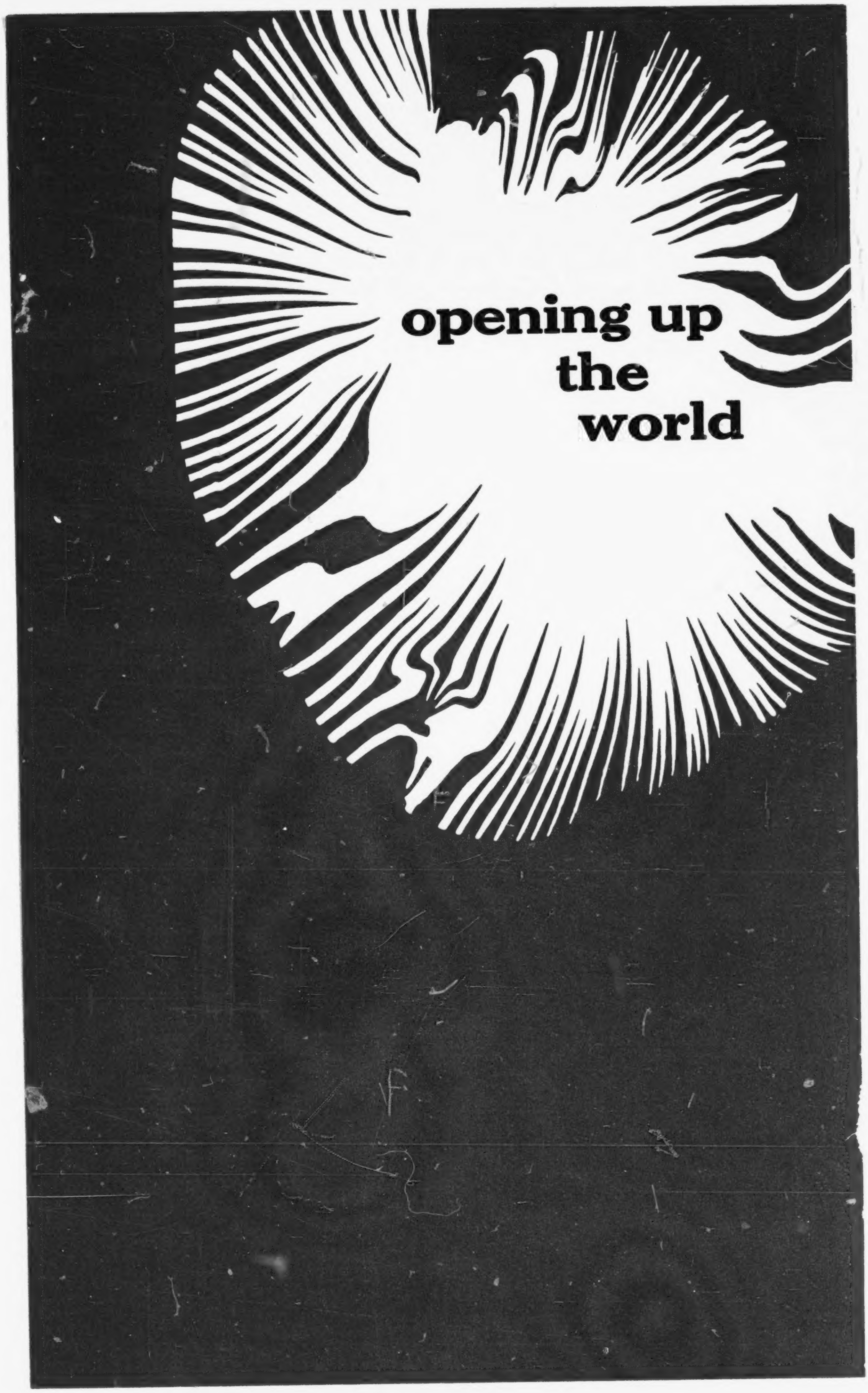
"Gateway English" was used in five other New York City schools during 1965–66. As soon as the first year of testing was completed, 13 other city school systems asked to use the curriculum plan, which was developed under the direction of Dr. Marjorie Smiley at Hunter College's curriculum study center. Dr. Smiley estimates that since 1965, more than 3,000 students have used the materials in pilot tests alone.

The new curriculum's aim is to make disadvantaged junior high pupils want to read. Negroes, American Indians, Puerto Ricans, and Mexican-Americans appear as heroes and heroines; many of the poems, stories, and novels are authored by members of the minority groups. Most of the works are contemporary, with themes that concern modern youth.

Responses, such as the following report from a Cleveland eighth grade student, show the effect: "I love the part where a Negro was a cowboy in *Nat Love* because you don't see them, you see them mostly as cooks." In a number of instances, teachers note that children are reading books voluntarily for the first time.

"Gateway English" also attempts to make students think more logically and critically about their own problems. Units have titles such as "Who Am I," "Coping," "Rebels and Regulars," and "A Family Is a Way of Feeling."

The course comes equipped with a detailed teacher's manual which proved "invaluable" according to Mrs. Kaufman, who began using "Gateway English" for inner city pupils with one slim year of teaching experience behind her. Funds to develop and test the "Gateway English" materials were provided by the U.S. Office of Education under the Cooperative Research program.



opening up the world

Scholars, teachers, and social scientists are blending their talents to develop better understanding of the religions, customs, geography, and history of other parts of the world.

Students looking for keys to the mysteries of the Orient may soon be finding more of the answers in high school history, thanks to a project at the University of California.

Since 1964, scholars and teachers in the Berkeley area have been developing a cure for one dilemma that has plagued American classrooms in post-war years—that materials available on Asia have not kept pace with that continent's increasing prominence in world affairs. As a result of this work, students in 25 San Francisco Bay area schools have been learning facts about Asia's history, geography, and politics that are usually found only in college-level courses. The project is supported by the U.S. Office of Education through its Cooperative Research program.

For Everett Johnson, an Oakland teacher, the Berkeley project was an opportunity to follow up his own interest in Asian culture and simultaneously to bring improvements into the classroom. Working with project staff, he developed special lesson units on Hinduism and Buddhism, then tested them out with his Oakland high school students.

"Teenagers had already heard enough about Oriental religions to be curious," he explains. "The interest was already there. I felt it was the ideal time to give them realistic, up-to-date information about the Far East. It's a fine way to further international understanding."

Johnson also uses other sections of the

Berkeley materials in his classes including one booklet that describes Asia's continuous struggle for food. High school units have been drawn up on such subjects as India's geography, the origins of the Chinese people and Communist strategies in Southeast Asia. Some elementary materials have also been produced.

Each unit is designed to take up approximately a week of classroom time although, like Johnson, some teachers see fit to devote as much as half their world history courses to Asia. The units can be used alongside traditional European-centered texts. For schools which wish to offer a full course on the Far East, an anthology, *Asia Today*, has been published.

The curriculum comes equipped with instructions and background information to guide teachers who are not particularly knowledgeable about Asia's culture. "You don't have to be an expert on Asia to teach these units," says Johnson.

No watered-down sampler of historical trifles, the Berkeley readings deal with concepts of history, religion, and the social sciences at a depth gaged respectable by scholars in these fields. To bring outstanding scholarship to bear on their work, the project staff drew assistance from noted specialists in Asian history, art, languages, sociology, and geography—including several from Berkeley's own Institute of International Studies. The project's director, Dr. John U. Michaelis of Berkeley's School of Education, has spent considerable time in Asia observing customs and political life first-hand.

A special effort was made to keep the course content up to date, allowing plenty of room for developments in Asia since 1945. For example, one set of high school readings on the United States relations with China contains original sources such as the texts of statements by post-war Presidents.

Another attempt to blend the talents of educators and specialists in social science fields is underway at the University of Texas (Austin). Here the focus is on opening a door to Latin America by way of social studies materials.

"The study of Latin America deserves special attention," says Dr. Clark C. Gill, one of the project's directors, "because of its close relationship with the United States. Many instructional programs are not achieving the desired results."

As a first step, the project staff asked specialists in Latin American affairs at the University of Texas to spell out what American high school graduates should know about countries south of the border. Now curriculum units to fill these needs are being designed. When completed, Dr. Gill and his co-director, William B. Conroy, say the curriculum plan will have some materials for every grade in elementary and secondary schools.

At Kent (Ohio) State University, educators who think that even first graders should be more worldly-wise have developed new lessons to help youngsters learn something about Japan. With just a few props like chopsticks and parasols, their curriculum plan enables teachers to take primary grade tots on an imaginary—but very realistic—visit with a Japanese family.

According to Dr. Melvin Arnoff, who heads Kent State's curriculum team, their work is part of a growing trend to get international education off to an early start in the classroom. "I think we should be making children world-conscious from the time they are in kindergarten," says Dr. Arnoff. "They start learning about other countries on TV then. I think this is the time to make them realize that while they are citizens of the U.S., they are also part of the world."

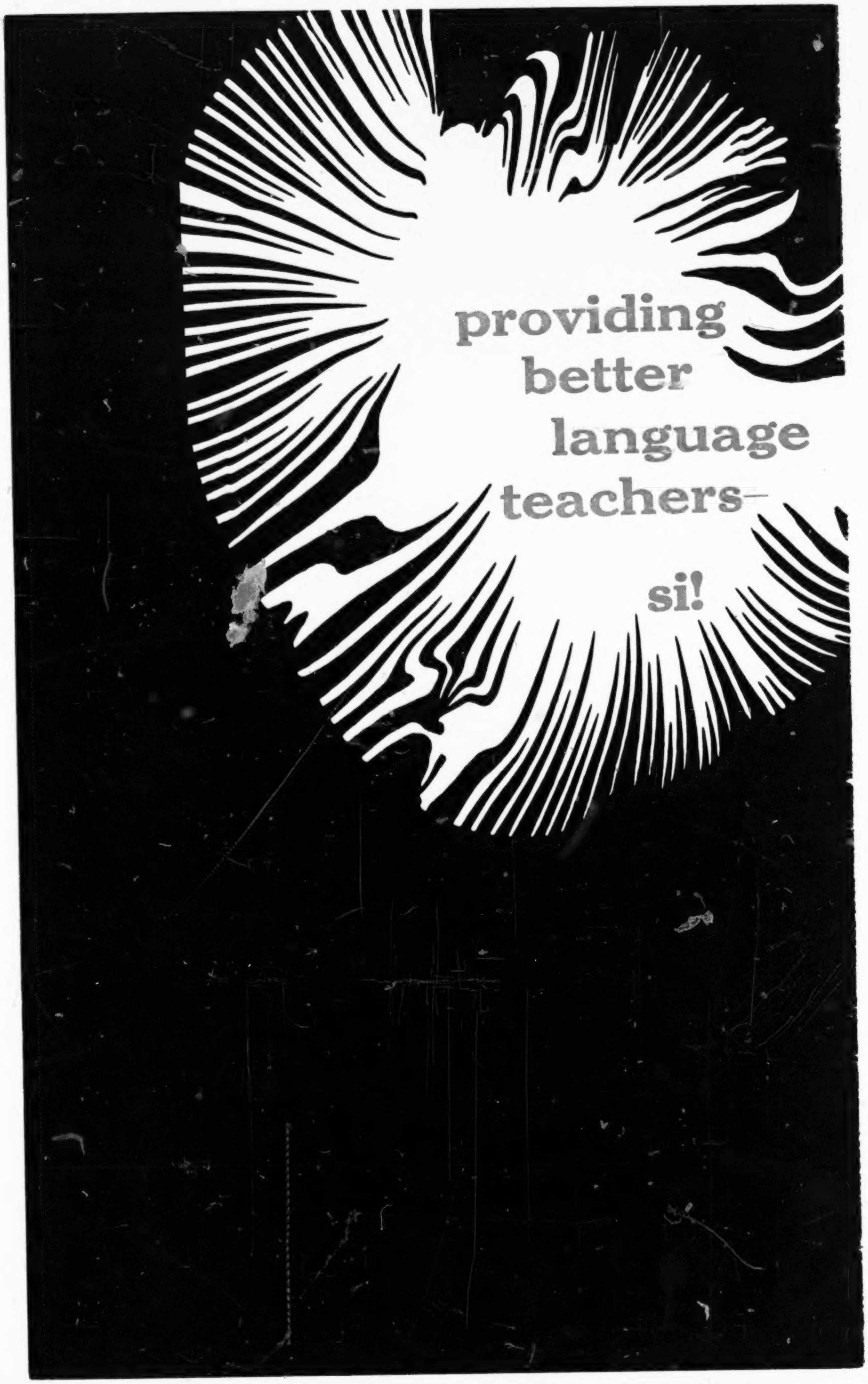
The materials use the role-playing approach: children pretend that they draw up their own passports, fly to Japan, and visit in the home of a delightful Japanese family. Then, through a wide assortment of stories, films, and other teaching aids, they explore how the Japanese actually live day to day. For much of their learning, they break up into small, self-directed groups to study specific topics such as Japanese clothing, housing, food, customs, and holidays.

The 4- to 6-week program also introduces first graders to some of the basic principles of geography, economics, history, sociology, and political science. For example, children quickly learn to spot the Japanese Islands on the map and then to locate "home."

During 1966 the program was used in 22 Springfield, Ohio, schools. Miss Betty Fisher, a Springfield supervisor, tells of the effect on one group of first graders: "As soon as I walked in I could tell it was a live classroom. Five groups were giving a short show for their parents on what they learned about Japan. Of the groups, one was supposed to consist of slow learners, but I couldn't tell which one it was. They were all excellent."

Parents report that the new lessons on Japan have added advantages. One mother noted that her usually rambunctious daughter was strangely quiet at the dinner table and even asked to be formally excused at the end of her meals. After several days of suspense, her mother asked if she was ill. "Oh, no," she replied, "I'm just playing Japanese!"

According to Dr. Arnoff, no special materials are required to teach the units except the books. When the program was piloted in the Springfield schools, teachers found that spare kimonos, sandals, and chopsticks could be rounded up easily from people in the community.



providing better language teachers— si!

Language teachers in several States and universities throughout the United States are being certified and placed more objectively than has ever been possible because of a special series of foreign language tests.

/97

Developed by the Modern Language Association (MLA) through cooperation from the Educational Testing Service and a grant from the U.S. Office of Education, the MLA tests are considered by many educators to be among the most valid and reliable tests available. To date, they are also the only standardized, validated language tests which measure speaking and listening skills as well as reading and writing ability. Teachers and advanced students can also be tested on three areas of competence—applied linguistics, culture-civilization, and professional preparation.

According to language professors who have used the tests, students and teachers of varied educational backgrounds can be rated honestly through them, since they measure actual language skills and are not concerned with the number of credits accumulated in college or how well the students were liked by their instructors.

Three States require prospective teachers to take the MLA tests before they can be certified. The California and New York boards of education ask only native speakers, or those who speak and understand the language but have not acquired the college credits to teach, to take the exams. In Pennsylvania, where the MLA tests are most extensively used, all language teachers must take the tests before they can be certified.

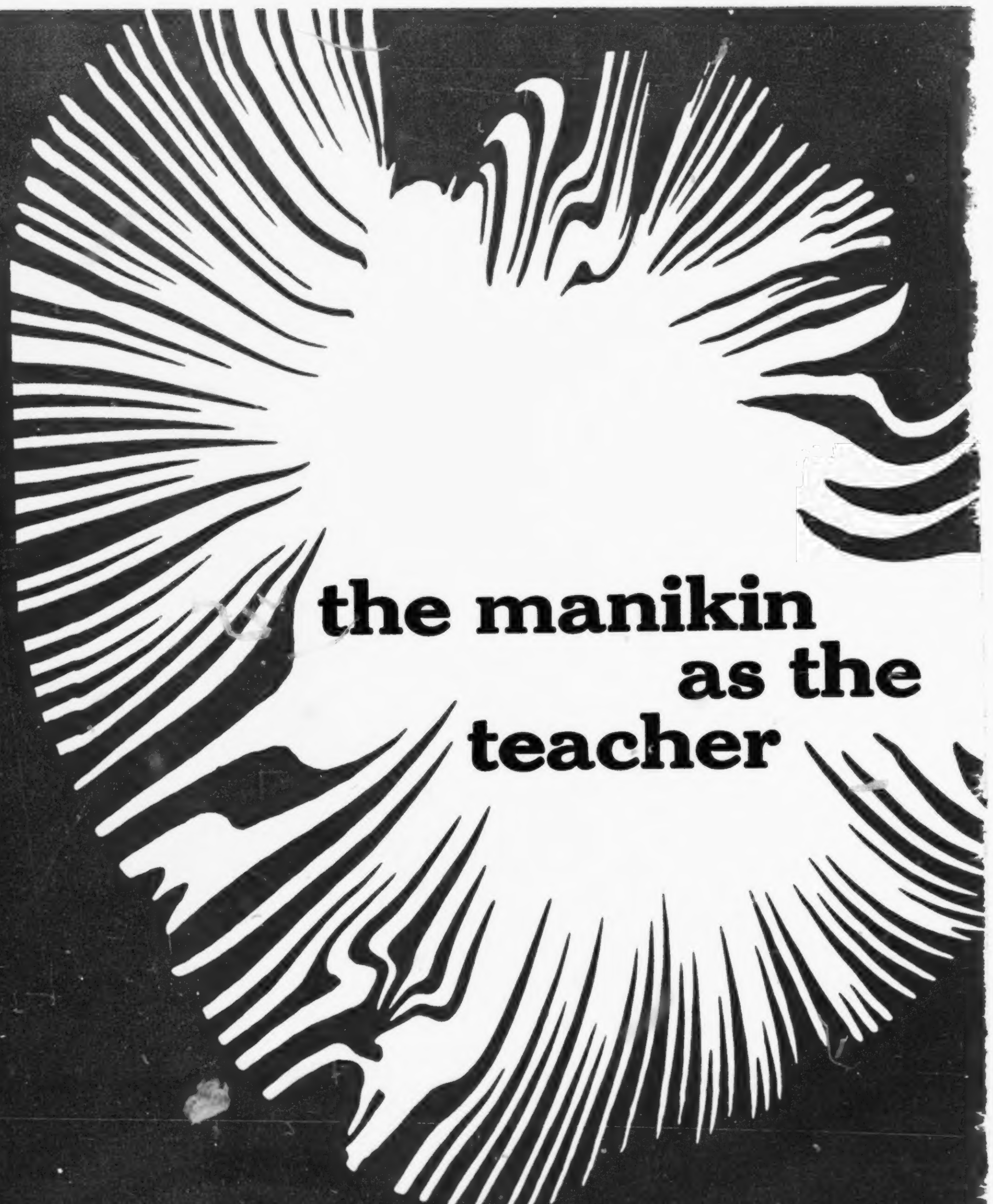
According to David T. Chestnut, modern foreign language specialist for the Pennsylvania Department of Public Instruction, the department became concerned more than 10 years ago when many language teachers in the State were 98/ found to lack important language skills, although many of these teachers had graduated from better-known institutions and had earned all the required credits for certification. In 1957-58 an advisory committee was named to improve certification requirements. One of the committee's recommendations was that all foreign language teaching candidates should be required to prove proficiency in conversation, reading, and writing through a standardized examination. In 1963, when the committee's suggestions were adopted, the MLA tests were chosen because they were the only available, standardized, validated tests.

Many universities require language majors to pass the MLA tests before they can graduate, but the chief requirements for certification in every other State are grades and credits earned in college.

Professor Remigio Pane, chairman of romance languages at Rutgers University, New Jersey, praises the MLA tests as being "highly objective" and notes "We encourage all our language students to take them," although they are not required to.

The MLA tests are also being used during teacher training summer institutes sponsored by the National Defense Education Act (NDEA). Tests generally are given as the institute begins and then again at its conclusion. Dr. Stowell Goding, Professor of French and Education at the University of Massachusetts, who has administered the MLA series to teachers at several NDEA institutes, said the tests are extremely useful because "they measure gains of the individual participants as well as the success of the institute." He added that in certification and placement of teachers these tests are more valid than transcripts of grades or letters of recommendation.

Development of the MLA tests began with a 1959 Office of Education grant under NDEA Title VI. The first 62 preliminary test forms, prepared in 1960, required almost 7 hours to administer. Since 1960 MLA test construction committees have improved and shortened versions of the originals and have added more test forms. Total testing time of the four basic skills has been reduced to less than 4 hours and 80 different forms are now available.



the manikin as the teacher

/101

The operating room was tense as the young doctor administered an anesthetic to his first patient. The patient was doing well—his pulse and breathing were regular; his blood pressure was normal. Suddenly, severe spasms shook the prostrate form. The larynx began to close. Then the patient bucked, attempted to cough the tube out of the throat. Startled, the doctor moved quickly to counter the complications.

But none of the others present seem much perturbed. This happens all the time at the University of Southern California's School of Medicine. And the patient, named Sim One, is used to complications.

Described by doctors as "the most complex medical teaching tool ever devised," Sim One is a life-sized computerized manikin used in training anesthesiologists in endotrachial intubation, a delicate technique used in approximately 70 percent of all major surgery. It involves slipping a tube into a patient's windpipe and administering anesthetic gases through it directly into the lungs. The manikin is sufficiently lifelike to represent a human patient awaiting surgery on an operating table. With it, residents can attain proficiency in intubation technique without risk to human life.

Sim One is programed to give humanlike response to the injection of varying doses of four different drugs. Its electronic "organs" simulate virtually all the symptoms and physiological responses the anesthesiologist might encounter in an actual operation. For example, when the muscle relaxant, succinylcholine, is injected, the manikin twitches just as a human being might. Under other drugs or conditions, the eyes open and close, the pupils dilate and contract, and the mouth opens and closes to reveal tongue, teeth, vocal cords, trachea, and bronchial tubes. Sim One also has a heartbeat and a varying blood pressure.

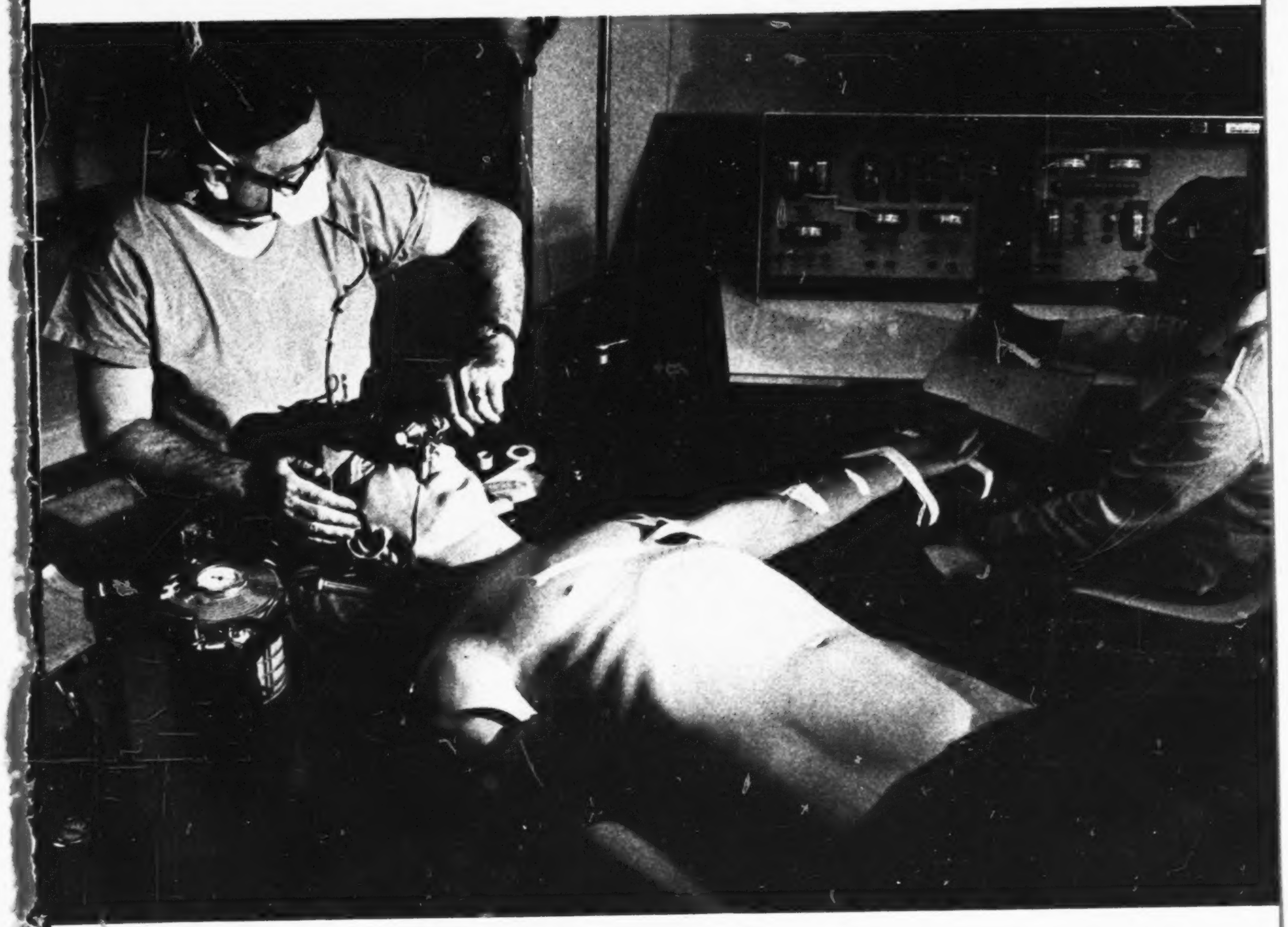
102/ This extraordinary computer-controlled simulator has many advantages as an educational tool. At any point an instructor can introduce unexpected developments. This affords the student training in a number of emergency situations that he might rarely, if ever, encounter in a normal residency. This, in turn, helps cut the time needed to reach the professional level of performance that J. S. Denson, codirector of the Sim One Project, says resident anesthesiologists should attain.

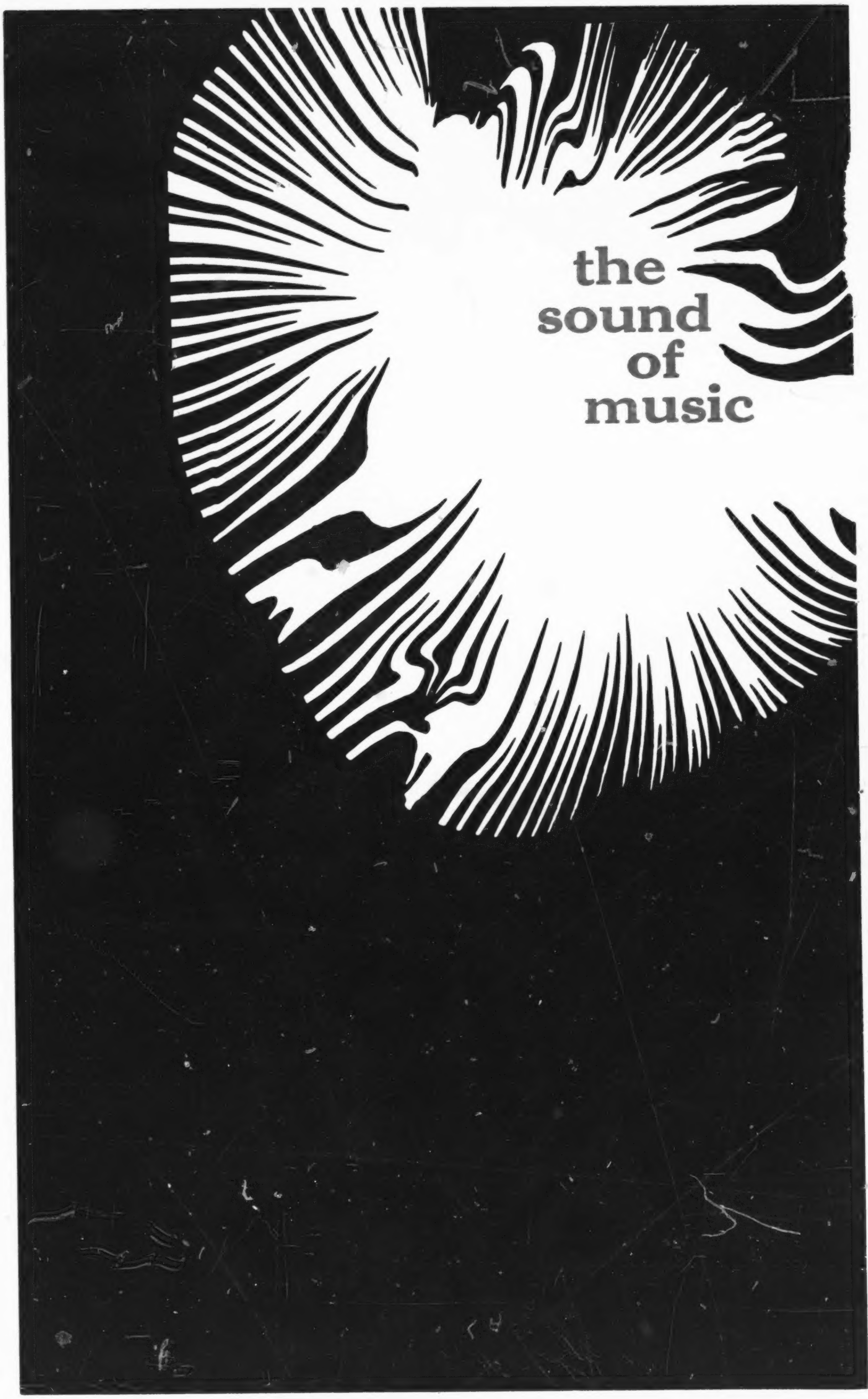
Training time is also reduced by the multiple opportunities Sim One offers for constant practice. Under ordinary conditions a resident usually is offered one or two opportunities to practice endotrachial intubation each day. At that rate, he needs 3 to 6 months of practice to become proficient. With Sim One, however, a resident can perform as many as 20 intubations per hour. And the supervisor need not always be present: the computer will print out a record of all work done and indicate any mistakes made. Although the system is still being tested, Stephen Abrahamson, codirector of the project, predicts that residents working with Sim One will achieve a professional level of performance in 1 to 2 weeks.

Sim One was developed by USC researchers working with engineers of Aerojet-General

Corporation under a $272,000 grant from the Cooperative Research program of the U.S. Office of Education. This past summer residents in anesthesiology at the Los Angeles General Hospital used it to test the feasibility, practicality, and utility of computer-controlled simulated patients.

Sim One's success in anesthesiology is seen as demonstrating the feasibility of teaching all kinds of manual medical techniques with simulators. Sim One and his progeny could assure that when tomorrow's surgeon prepares to operate on his very first patient, he already will have had wide experience.





the sound of music

Asked to name their favorite composers, children in one elementary school recently turned in rosters like this: "Polly Smith, Sammy Jones, and Beethoven!" Although the first two names may not ring bells in musical circles, they belong, nevertheless, to bonafide composers—two third-graders whose teachers are dedicated to making elementary school music into an exciting creative adventure.

The pint-size composers are a product of a new music curriculum that Dr. Ronald Thomas of Manhattanville College of the Sacred Heart, Purchase, N.Y., has been developing over the past two years. "While the objective is not," says Dr. Thomas, "to make every child a budding composer, we do want all these children to have some experience with every part of the total musical process—with performing, composing, conducting, and . . . criticism."

The Manhattanville music professor's work is being supported by the U.S. Office of Education through its Arts and Humanities Research Program. In addition to music, this program encourages promising educational research and development activities in art, theater, dance, and museum presentations.

Like Maria, the able music educator of Trapp Family fame, Dr. Thomas likes to start teaching at the very beginning, but to him this doesn't mean "do-re-me." Instead, he starts with sound itself, making children sensitive to the everyday noises around them. Then he teaches children to put these sounds together into music pieces that show the basic principles of pitch, rhythm, dynamics, timbre, and form.

"These are the fundamental concepts of music," he explains. "When children can compose and perform their own pieces, and criticize those of their classmates, then we know they really understand these principles."

In classes using the Manhattanville program, elementary schoolers tackle specific musical "problems." For example, the teacher might give them a lesson on the motif. She explains that a motif is a four-note sequence that composers use to establish the underlying thought of a whole piece. She might point them to the beginning of Beethoven's Fifth Symphony as a sample. Then she leaves them to devise a piece based on a motif of their own making.

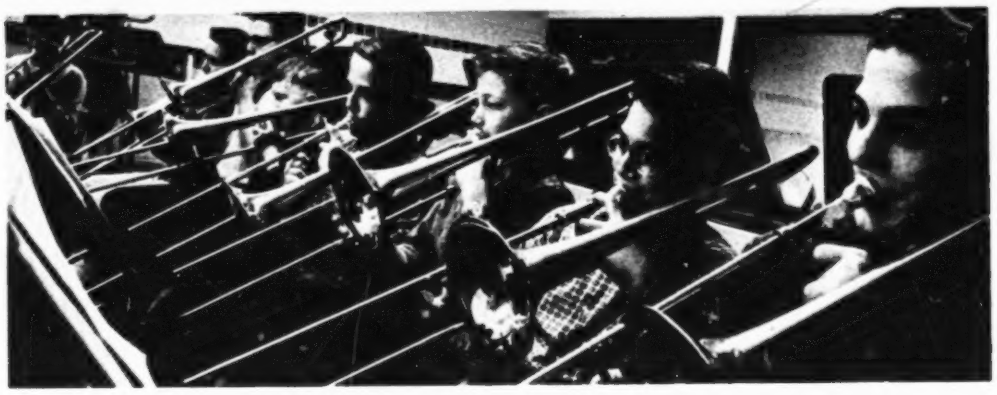
"At first," says Thomas, "their pieces are pretty dull, so teachers send them to recordings of famous works so they can see how other composers handled the problem. But the main thing is that the children have personal experiences with music."

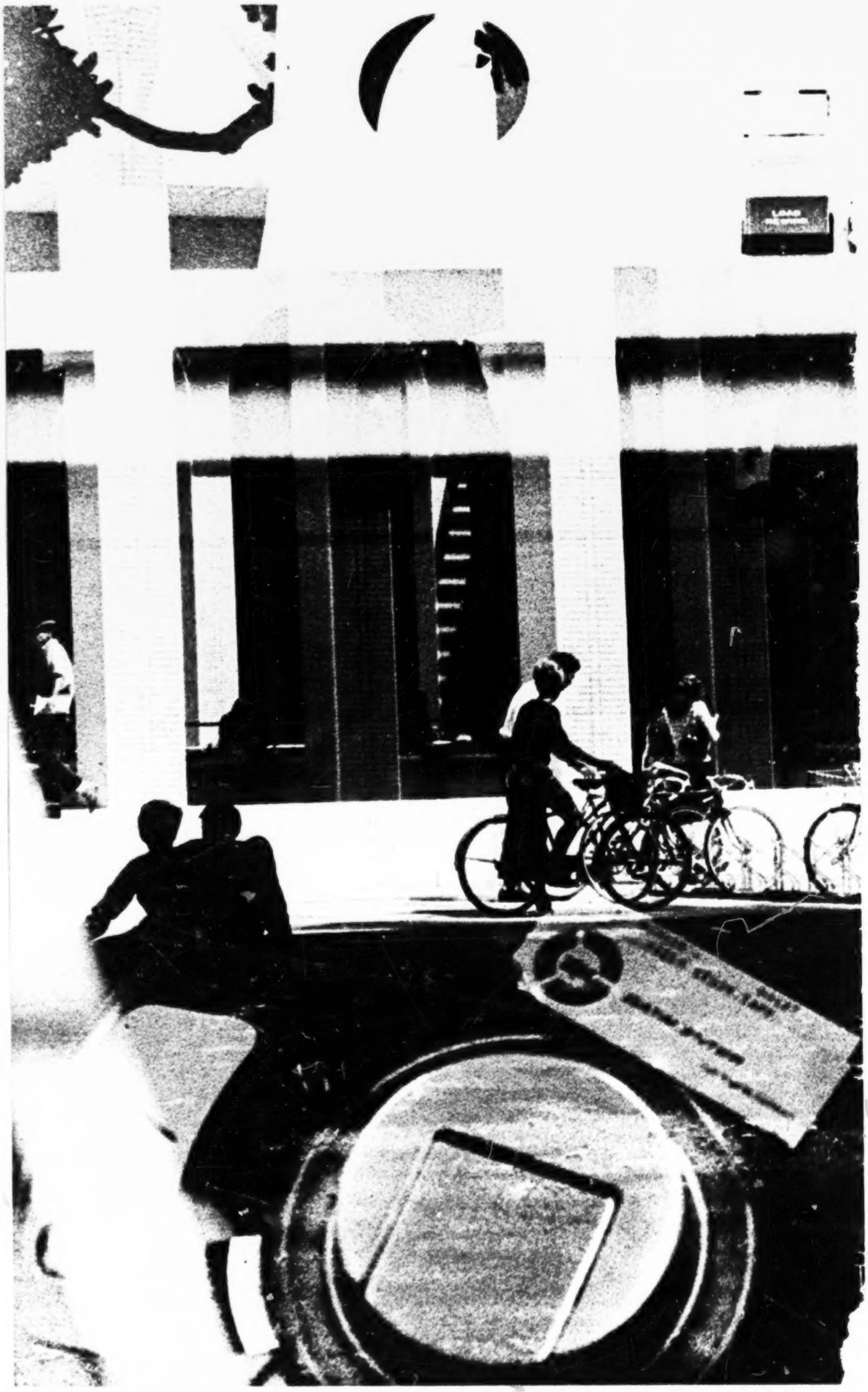
One result of this unusual approach to music education is that teachers find their students are really excited about music, even in the junior high years when music appreciation usually reaches a low point. Thomas says the reason is that the youngsters are creatively involved: As composers and critics on their own, they learn to make value judgments about music that are respected by teachers and classmates alike.

The Manhattanville program spans grades 1-12, taking high school students into some of the higher reaches of music composition and performance. In several schools they work with such sophisticated concepts as the 12-tone scale, a 20th century device used by such composers as Stravinsky and Schoenberg. As conductors, they lead their fellow students through compositions for everything from timpani solo to full orchestra.

Teachers, too, are encouraged to lead an active musical life, both inside and outside the school. Although many of the program's teachers are accomplished musicians, experiments in Washington, D.C., have shown that regular elementary teachers can handle the new curriculum with a little workshop training.

To prepare for the Manhattanville curriculum project, Dr. Thomas first spent nearly three years studying innovative music programs at schools throughout the Nation. In the schools he surveyed Dr. Thomas found that often an inspired music teacher had given a particularly brilliant touch to the music education program. Dr. Thomas weaved these ideas—as well as his own—into a comprehensive music curriculum that could be adapted by other schools. Because of the new curriculum, children across the country are finding a joy in music that may stay with them the rest of their lives.





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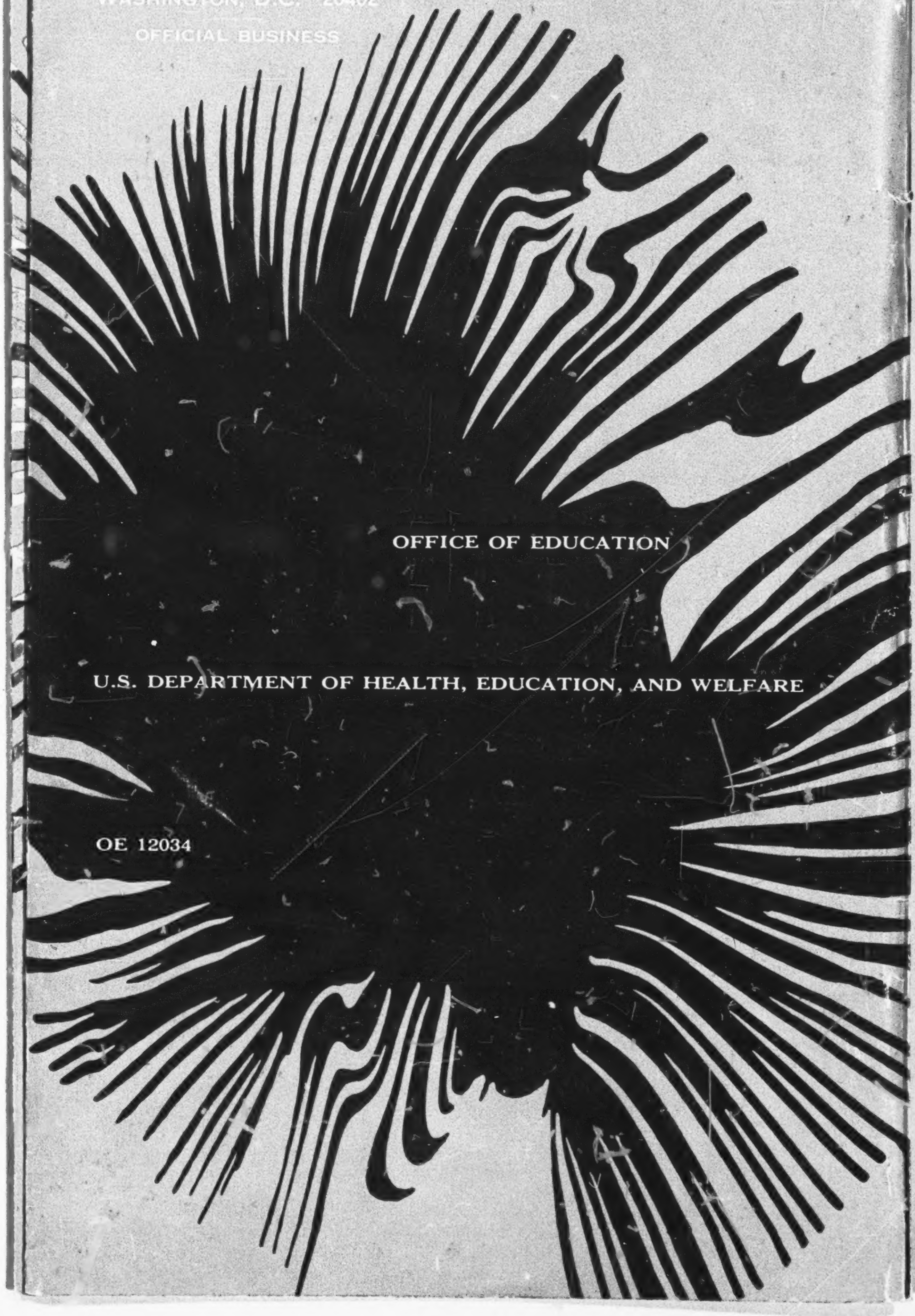

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